

RCA

VideoCassette
Recorder

Owner's Manual

V

L

T

3

8

8

Warranty Registration

No other RCA Video Cassette Recorder has the same serial number as yours. It is important that you record the number and other vital information here, in case your VCR is stolen or in case you need a complete description for any other reason. You will find the model and serial numbers on the back of the VCR. You will also find both numbers recorded on your registration form.

Purchase Date _____

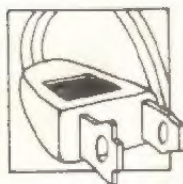
Dealer _____

Model: **VLT388** Serial Number _____

VCR registration is very important so that you can be contacted should there be a safety inspection, modification or product recall under applicable laws or regulations or otherwise. The dealer who sold you the VCR should have registered it and given you a copy of the registration form.

If your dealer did not give you a copy of the registration, contact him promptly and ask for it. You must be able to show your registration or evidence of purchase date to any RCA Authorized VCR Servicenter or the RCA Service Company to receive warranty parts and service. We suggest you attach your sales slip and warranty registration to this booklet and keep them in a safe place for future reference.

Safety Precautions



Your VCR operates on 120 volts, 60 Hz (normal household current) and has a polarized plug. Because one blade of the plug is wider than the other, the plug fits in the wall socket only one way. Do not defeat the safety feature of this plug. If you need an extension, use a polarized cord. To prevent electric shock do not use the polarized plug on this Video Cassette Recorder with an extension cord, receptacle, or other outlet unless the blades can be fully inserted to prevent blade exposure.

Mise en garde: Pour prevenir les chocs electriques, ne pas utiliser la fiche polarisee de cet appareil avec une rallonge, une prise de courant ou une autre sortie, a moins que les lames puissent etre inserees a fond sans qu'aucune partie ne soit laissee a decouvert.

Caution: To reduce the risk of electric shock, do not remove the cover or back. No user-serviceable parts are inside. If you spill liquid on the VCR disconnect the power cord to prevent possible fire or shock hazard and consult authorized service personnel. Moisture can damage internal parts. Refer all service to RCA Authorized Servicenter personnel only.

WARNING: To prevent fire or shock hazard, do not expose this VCR to rain or moisture.

Illustrated below is the label on the back of your Video Cassette Recorder.



The symbol of a lightning flash within a triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shocks.

An exclamation point within a triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the product.

Caution: Maintain electrical safety. Powerline-operated equipment or accessories connected to this unit should bear the UL listing mark or CSA certification mark on the accessory itself and should not have been modified so as to defeat the safety features. This will help avoid any potential hazard from electric shock or fire. In doubt, contact qualified service personnel.

Note to Cable TV Installer:

This reminder is provided to call your attention to Article 820-22 of the National Electric Code, that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

Caution: The unauthorized recording of television programs and other materials may infringe the rights of others.

Using This Manual

Although your VCR has been designed for ease of operation, it is likely the most sophisticated electronic device in your home, and it may take some time before you become completely familiar with its use. The information in this manual is arranged in the order that we anticipate you will use it to install and operate your new RCA Video Cassette Recorder. We suggest that you follow the instructions one step at a time, until you have mastered this instrument. If you encounter an unfamiliar term, please refer to the **Glossary** for an explanation.

The **Features** of the VCR are listed first, with page references for using them. Following this are illustrations of the front and back of your VCR and the remote control unit, with a brief description of what each control does, and what may be connected to each of the connecting jacks and terminals.

The **Installation Section** begins with basic information for connecting the VCR and TV to your antennas. This may be all the information you will need. This is followed by instructions for connecting other equipment to your VCR and TV. Refer to the sections you need, or skip directly to page 15 for setting the clock and checking the installation.

Your VCR is equipped with a highly versatile **Voltage Synthesis Tuner** that has been preset at the factory to receive broadcast channels 2 through 13. Pages 16 and 17 tell how to use it, and how to add or delete channels.

Operating Guides give the steps you should follow for most recording and playback situations. These are followed by details for using the advanced features of your VCR. Even if you are familiar with VCR's, we urge you to read all of this section. There may be some features you aren't aware of.

Background Information tells briefly how a VCR works and explains the operation of the special-effects functions of your VCR. Read it at your leisure.

Please do not ignore the final section about **Care and Maintenance** for your VCR and video cassettes. Your VCR is a precision instrument, designed to give you many years of quality performance. To do this, it does require reasonable care. In case you do have a problem, we have included **Troubleshooting** information. Frequently you can avoid the expense and inconvenience of technical service by following these suggestions.

Contents

Warranty Registration	Inside Front Cover
Safety Precautions	Inside Front Cover
Features and Accessories	2
About Video Cassettes	
• For Best Cassette Performance	3
• Video Cassette Safety Tab	3
• Cassette Playing Times	3
Controls, Display, and Connectors	
• Major Operating Controls	4-5
• Display Unit and Auxiliary Controls	6-7
• Back-Panel Controls and Connectors	7
• Remote Control Unit	8
• Compatible Remote Control Units	9
Installation	
• VCR Location and Antenna Accessories Supplied ..	10
• Basic Antenna Connections	11-12
• Connections for TV Monitor/Receivers	12-13
• Instructions for Indoor Antennas	13
• Connections for Cable-TV Systems	13
• Connections for Second VCR and Camera	14
Setting the Clock and Checking the Installation	15
Operating the VS Tuner	16-17
Operating Guides	18-21
Detailed Operating Instructions	
• Programming the Timer	22-23
• Timer and Express Recording	24
• Additional Information	25
Background Information	26-27
Glossary of Terms	28
Care, Maintenance, and Troubleshooting	29
Specifications	Back Cover
RCA Limited Warranty	Back Cover

Features and Accessories

Off-the-Air TV Recording

The built-in VHF/UHF/Cable tuner permits recording a program off-the-air or off-the-cable while you view another channel with your TV. You can also view the channel being received by the VCR tuner while it is recording or when it is stopped. See pages 19 and 20.

Extended Play Time

Your RCA SelectaVision VCR lets you record up to eight hours, depending on recording speed and cassette type. See the table on Page 3.

Cable-Ready Voltage Synthesis Tuner

You can select unscrambled Cable TV channels A-1, A-2, and A through W just like broadcast channels, without using an external converter. The voltage-synthesis tuner can be preset to receive up to eighty intermixed broadcast and Cable TV channels, with each station preset on the channel number you want. See pages 16 and 17.

Infrared Remote Control

The remote hand unit controls Channel Selection, Power, Play, Record, Stop, Pause, Rewind, Fast Forward, Search and VCR/TV switching. See page 8.

Unattended (Timer) Recording

The programmable timer can be preset up to two weeks in advance to record up to four preselected programs. The timer turns your VCR on and off and changes channels automatically. See pages 21-24.

Express Recording (XPR)

XPR permits up to four hours of unattended recording without programming the timer. If you are interrupted during your favorite program, you can use XPR to start recording it in a few seconds and view it later. See pages 21 and 24.

Picture Search

Use "Picture Search" to scan a recording quickly and find the section you want to view. A viewable picture is displayed when you search a tape recorded at any speed, although quality is best for tapes recorded at SLP (Super Long Play). See pages 4 and 5.

Stop Action and Pause

Pressing the pause button lets you stop the tape's forward motion for stop-action viewing during playback, or to eliminate unwanted material when you are recording. See page 25. Stop action is designed to be used on tapes recorded at the SLP speed. Stop action may be used on tapes recorded at other speeds, however the picture may be noisy.

Memory Stop

When the tape counter is displayed, the VCR stops rewinding when the counter reads 0000. By simply resetting the counter, you can rewind to a selected point for "instant replay" or repeated viewing. See page 25.

Automatic Rewind

The VCR automatically rewinds when it comes to the end of the tape. To avoid accidental erasure during Timer Recording or Express Recording, it stops at the end of tape but does not rewind.

Power Off From Rewind

When power is turned off during rewind, the unit will finish rewinding and turn off automatically.

Accessories

Consult your RCA dealer for complete details of the wide selection of cameras that are available. See page 14 for connection.

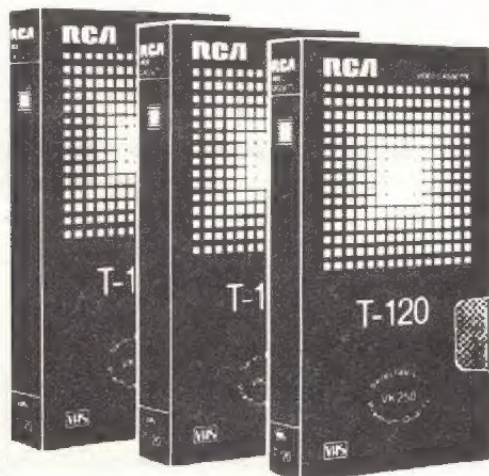
Video Cassettes

VIDEO CASSETTES

RCA recommends that RCA cassettes be used with this unit. The tape in these cassettes is of high-quality formulation, intended for use with multi-speed VHS format video cassette recorders. It has been manufactured to RCA's critical specifications, for excellent performance with RCA VCR's. Use of tape not meeting these specifications could considerably reduce the performance of your multi-speed VCR.

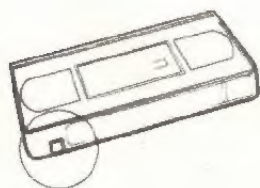
Use of poor quality tapes or tapes that have been damaged or mishandled can contaminate the VCR heads, resulting in a snowy picture or no picture at all during playback. Because RCA has no control over the type of tape purchased or rented by consumers, **head cleaning is not covered by RCA's warranty.** It is considered normal maintenance.

Playing a new RCA tape for approximately 30 minutes will often satisfactorily clean the VCR heads and improve your picture. If a snowy picture or no-picture condition persists, consider the use of a chemical non-abrasive head cleaning tape (RCA Stock No. AV009) available from your dealer or many electronic supply stores.



ERASE PROTECTION

To prevent accidental erasure of recorded material, remove the safety tab from the back of the cassette as shown in the illustration. Recording is impossible when this tab is removed. To record again on a cassette that has the tab removed, simply cover the safety-tab hole with vinyl tape as shown below.



Safety Tab



To prevent accidental erasure break the tab.



To record again, cover the hole with vinyl tape.

CASSETTE PLAYING TIMES AND SPEEDS

The playing times and counter readings are approximate. It is assumed the counter has been set to 0000 at the start of the tape.

SPEED	T-60 CASSETTE (VK125)		
	SP Counter Reading	LP Counter Reading	SLP Counter Reading
Time			
1 hour	2080 (end)	1120	760
2 hours		2080 (end)	1460
3 hours			2080 (end)

SPEED	T-120 CASSETTE (VK250)		
	SP Counter Reading	LP Counter Reading	SLP Counter Reading
Time			
1 hour	3520	2100	1520
2 hours	5680 (end)	3520	2600
3 hours		4660	3520
4 hours		5680 (end)	4300
5 hours			5000
6 hours			5680 (end)

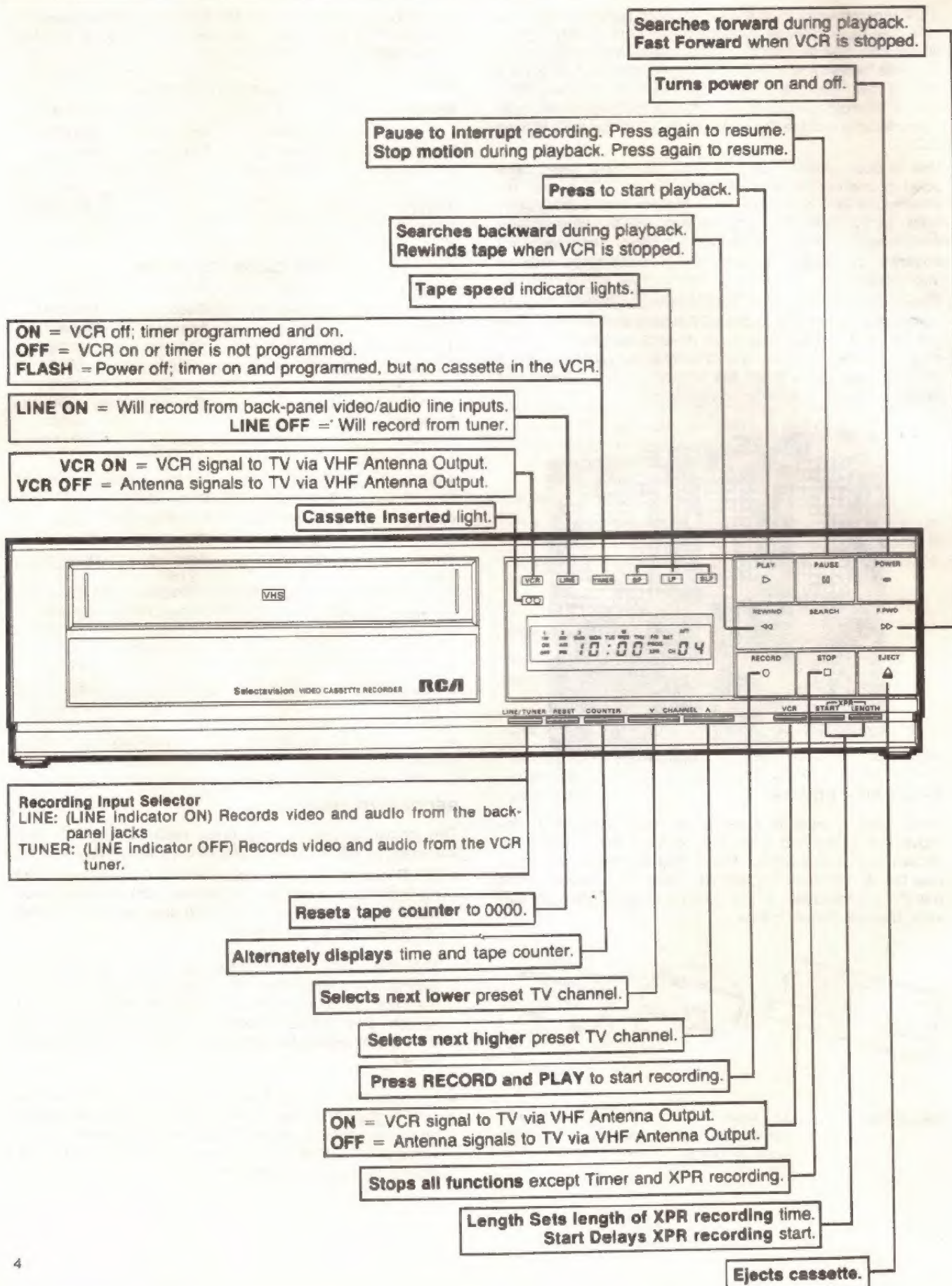
SPEED	T-160 CASSETTE (VK330)		
	SP Counter Reading	LP Counter Reading	SLP Counter Reading
Time			
1 hour	3740	2160	1560
2 hours	6120	3740	2740
3 hours		5020	3740
4 hours		6120	4640
5 hours			5400
6 hours			6120
7 hours			6760
8 hours			7420 (end)

RECORDING SPEED

The characteristics of the three recording speeds are summarized below to help you decide which to use.

- **SP:** Requires the most tape. Recorded video and audio have the least noise in normal playback. Pre-recorded tapes use SP for this reason and also because all VHS recorders have this speed.
- **SLP:** Requires one-third as much tape as SP. SLP has slightly more noise than LP in normal playback (which may not be noticeable), but less in stop-action and search. **The special effects (search and still) in your VCR are designed for optimum performance at the SLP speed.**
- **LP:** Requires one-half as much tape as SP. Noise is very slightly less than in SLP, but the noise for search and stop-action is generally greatest. This speed is provided primarily for playing tapes recorded on older machines that do not have SLP.

Operating Controls



Operating Controls (Continued)

OPERATING CONTROLS

The controls of your VCR are designed so that:

- Accidentally pressing a wrong button will not damage the VCR or the cassette.
- Non-essential buttons are disabled during recording to help you avoid accidental interruptions.
- Operation of the VCR is automatic whenever this is feasible.
- Automatic recording functions (Timer and XPR) will not disturb normal TV viewing.
- If you run out of tape during playback or normal recording, the VCR rewinds it and stops automatically. If tape runs out during Timer or Express Recording, the VCR stops without rewinding.

Because of these features, the functions of the control buttons depend on the condition of the VCR at the time they are used. Additional information about some of the buttons follows.

POWER BUTTON

When the VCR is turned off, the timer is automatically turned on if it has been programmed. When the VCR is turned on, the timer is automatically turned off.

If excess moisture has condensed inside the VCR, the light in the stop button will flash when you turn power on and the VCR will not operate. Leave it turned on until the light glows steadily and then proceed.

PAUSE

When the VCR is playing, pressing the pause button produces a stop-action picture. Press it again to resume normal playback. If you do not resume playback, the VCR will stop after five minutes.

When the VCR is recording, the pause button alternately interrupts and resumes the recording, but not during Timer and Express Recording.

RECORD + PLAY

Both buttons must be pressed at the same time to begin recording.

SEARCH/REWIND

If the VCR is playing, this button is for Backward Search ("fast-motion" picture but no sound). Release the button for normal playback.

If the VCR is stopped, rewinding will continue after the button has been pressed momentarily. Also see "Memory Stop" on page 25.

SEARCH/F. FWD

If the VCR is playing, this button is for Forward Search ("fast-motion" picture without sound). Release the button for normal playback.

If the VCR is stopped, fast forward continues to the end of the tape, followed by rewind, when you momentarily press this button.

STOP

This button stops whatever the VCR is doing, except Timer and Express Recording. To stop Timer and Express Recording, press **POWER** and then **STOP**.

XPR START and LENGTH

Express Recording (XPR) is explained on page 24.

VCR

This switch is labeled **VCR** on the front panel, but it is called the "VCR/TV" switch throughout this manual to avoid confusion of terms. The switch controls the signal flow from the VCR to a TV whose VHF antenna input is connected to the VCR's antenna output. It has no effect on the audio and video output jacks of the VCR. It alternately selects:

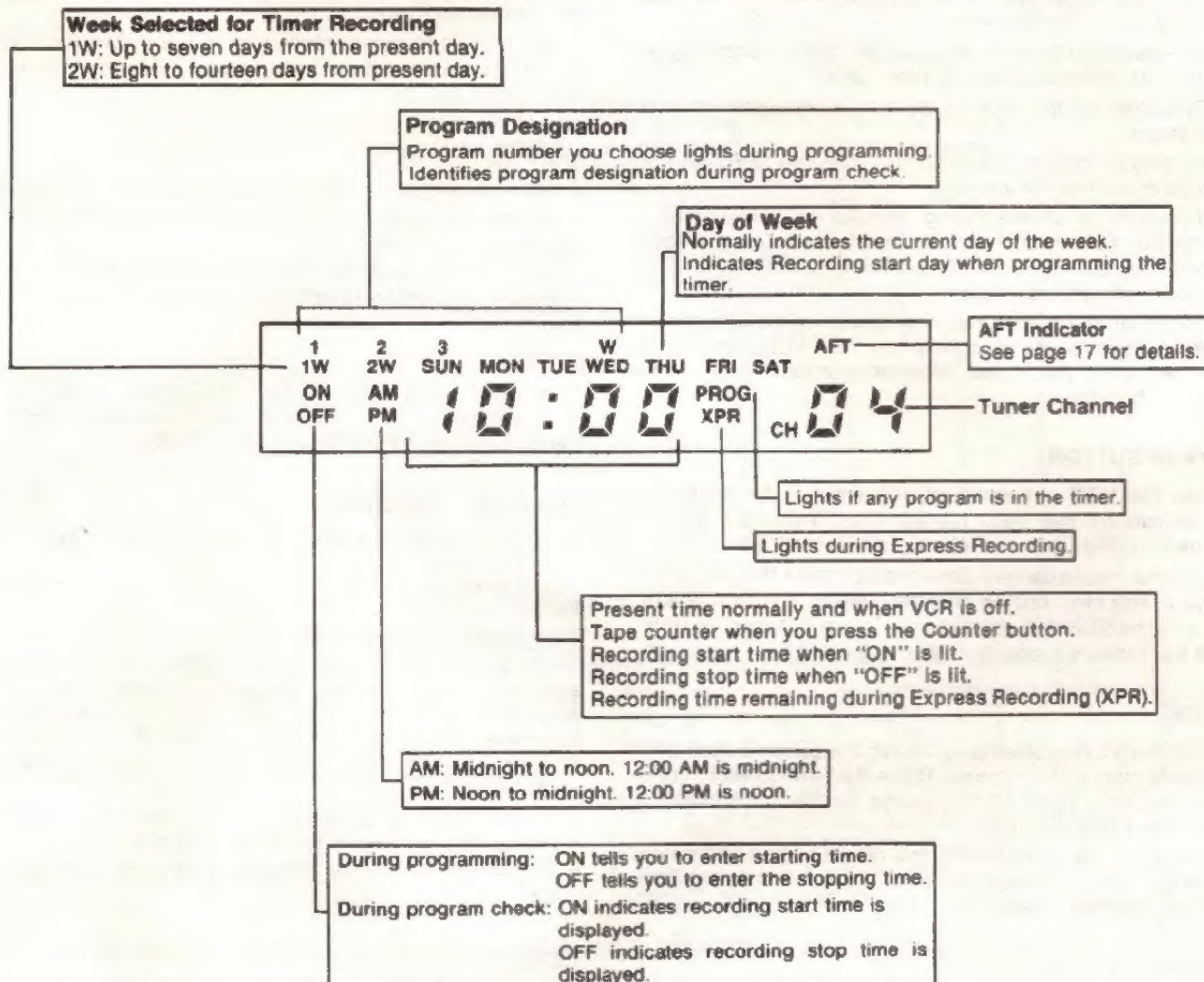
- "VCR Mode" for playback or for monitoring what you are recording. The VCR indicator light is on.
- "TV Mode" for normal TV viewing. The indicator light is off.

COUNTER

Alternately displays the tape counter or the time. When the tape counter is displayed, the "Memory Stop" feature is automatically activated. See page 25.

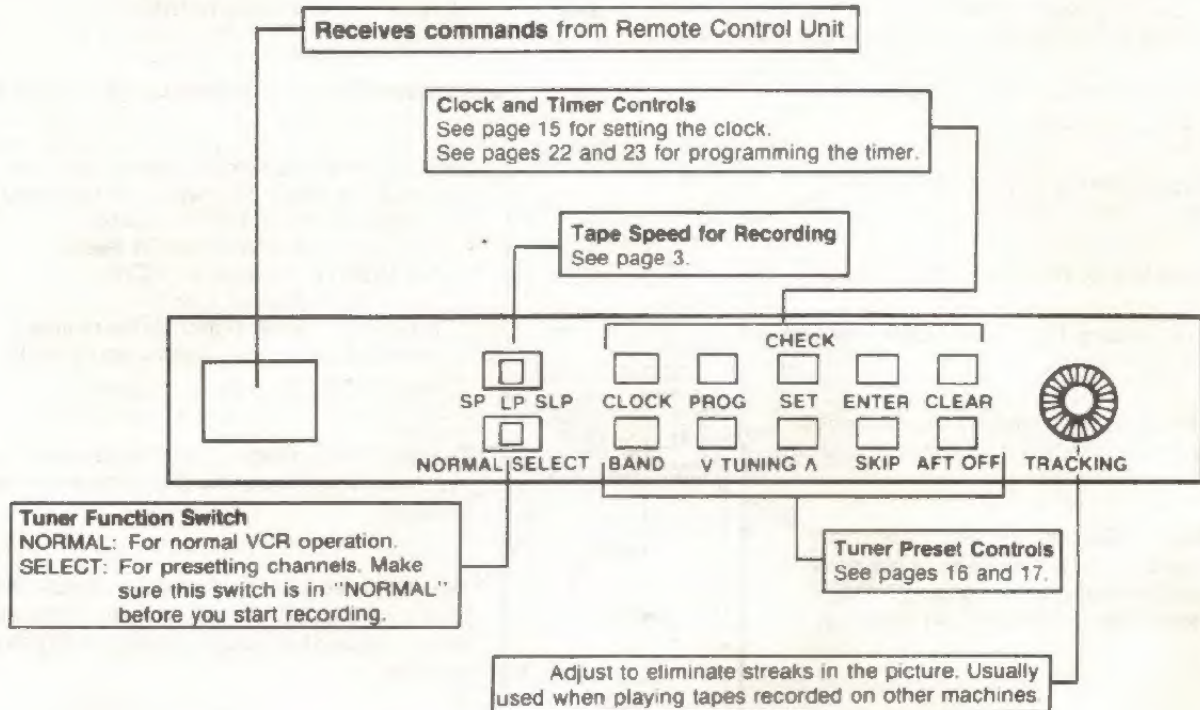
Display Unit

The illustration below shows the locations of all character groups in the display window. Not all of them can appear at once. During normal operation the display tells the time, day of the week, and the channel number currently selected.

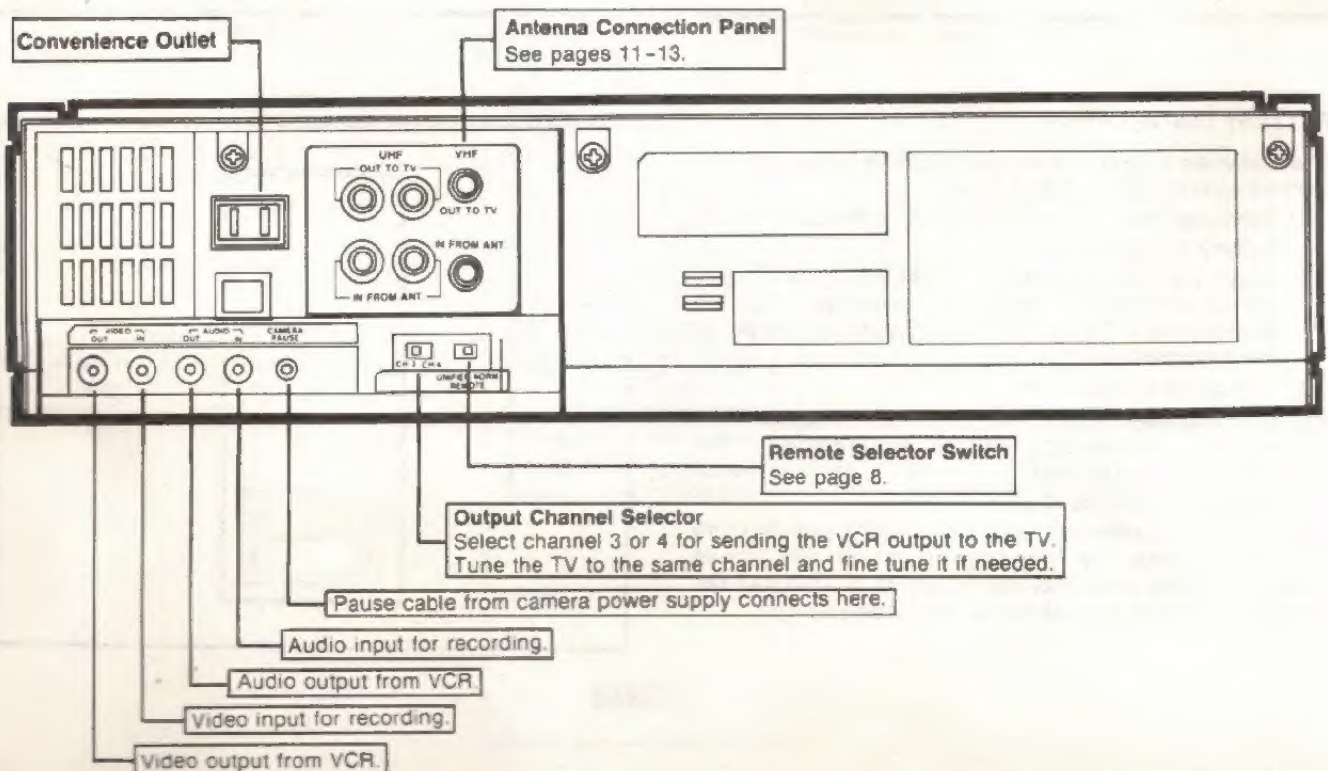


Auxiliary Controls

The controls shown in the illustration are located beneath the controls door on the front of your VCR.



Controls and Jacks on the Back



Remote Control

This remote control hand unit is furnished with your VCR. Its buttons control the same functions as the corresponding buttons on the front panel. Since it operates your VCR by infrared light, it is immune to electrical and mechanical

interference. Aim it at the front of the VCR.

To use this remote unit set the remote-control selector switch on the back of the VCR to **NORMAL**.

Indicator—Light blinks when hand unit is transmitting to the VCR.

Power Button—Press to turn VCR power on and off.

Play—Press to play recorded material.

Stop—Press to stop tape. Stop Button must be pressed after "Record".

Pause—Press for momentary pause during recording or to stop picture on the screen during playback.

Rewind/Search Switch—Press from stop to rewind tape after either recording or playback. This should be done after every use. Press and hold from play to reverse scan program material.

Window—Transmits signal to VCR. Aim at VCR.

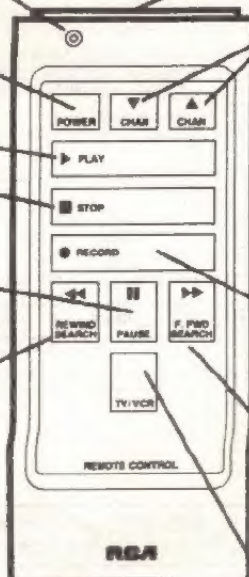
Channel—Permits remote channel selection on your VCR for either TV viewing or recording.

To change channels for TV viewing:

1. Turn on TV and VCR On/Off Switch.
2. Set VCR/TV Selector to "VCR".
3. Tune TV to channel 3 or 4.
4. Press the Channel Button on the remote control to select the channel you want to view or record.

Record—Press Record and Play buttons to start recording. Press the Stop button to end recording.

Fast Forward/Search Switch (F. Fwd)—Press from stop to quickly access program material. Press and hold from play to forward scan program material.



VCR/TV Selector Button—Selects the signal to be viewed. This button performs the same function as the VCR/TV switch on the VCR.

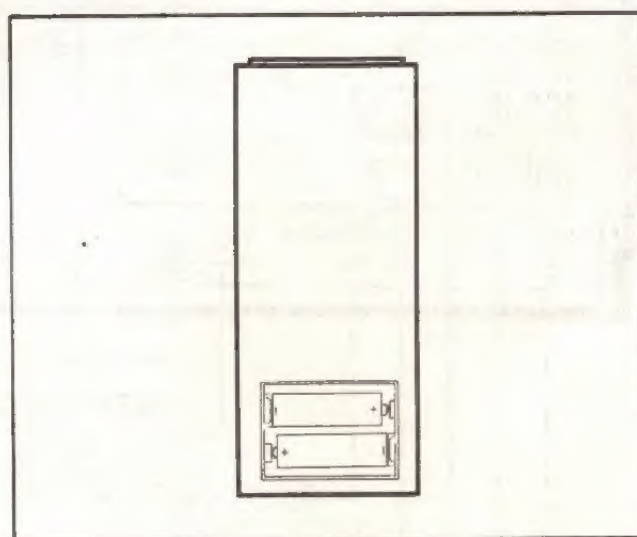
BATTERY INSTALLATION

The batteries supplied with your remote hand unit are packed separately. To install them:

1. Turn the hand unit over and remove the cover of the battery compartment.
2. Insert the "AA" batteries so that their positive (+) ends contact the positive battery terminals (+) in the compartment. These are marked in the bottom of the compartment.
3. Replace the cover.

Replacement batteries are widely available. Use size "AA" 1.5 volt cells. Alkaline type batteries are preferred. If the hand unit is not to be used for a month or more, it is wise to remove the batteries to avoid leakage.

Good quality alkaline batteries should last a year or more in normal service. Avoid laying the remote unit upside down or placing other objects on top of it. This can depress the buttons and discharge the battery.



Compatible Remote Control Units

Selected models of RCA color TV receivers and monitor/receivers feature infrared hand units that will also remotely control your VCR.

To use these units switch the remote-control selector on the back of your VCR to **UNIFIED**

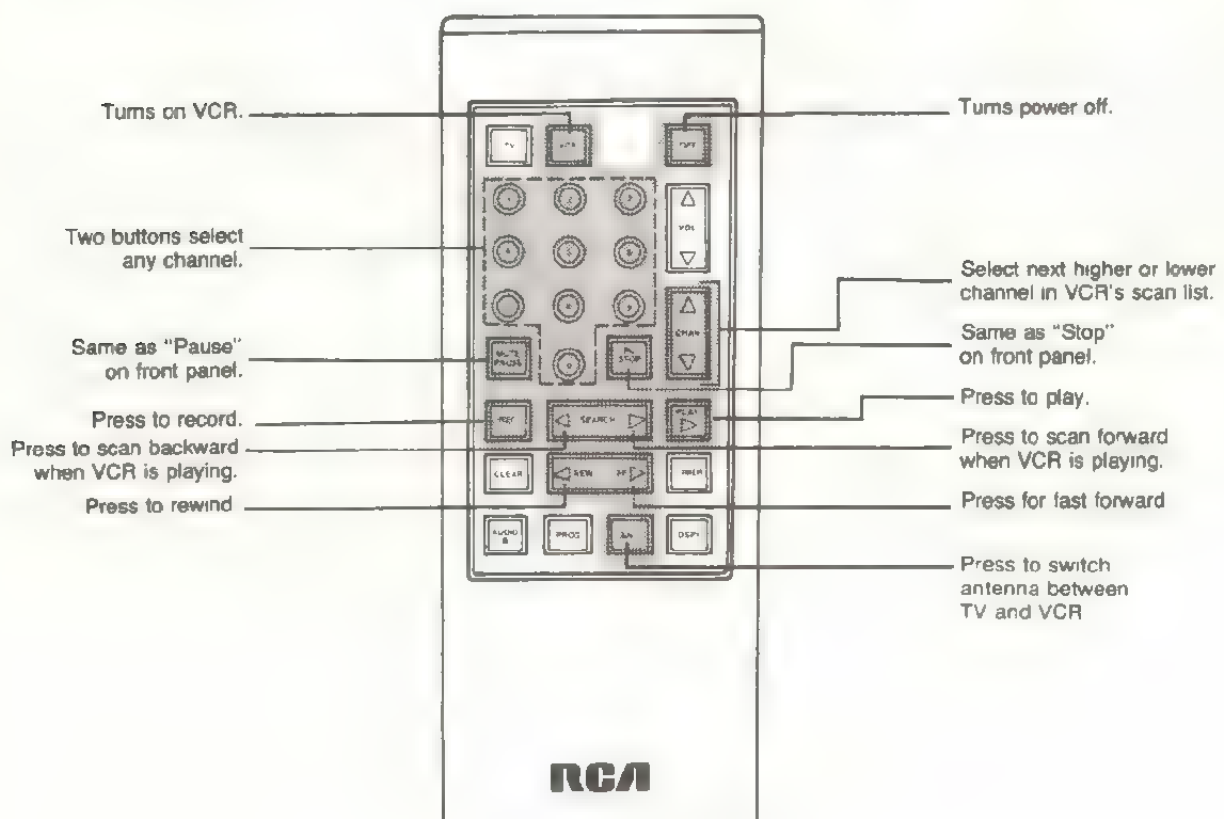
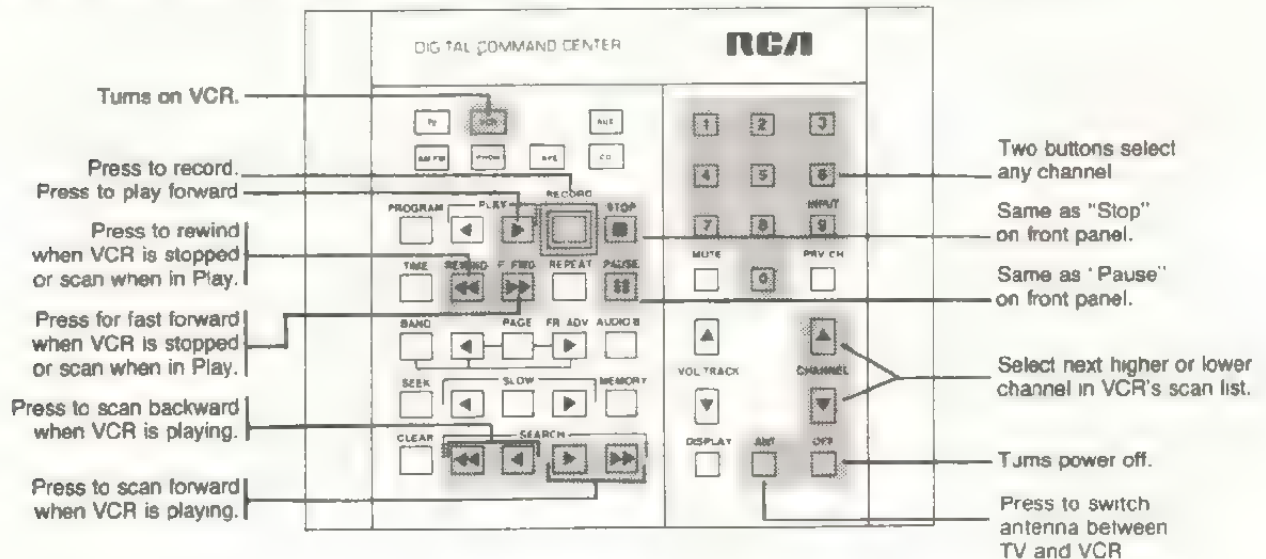
Only the buttons that are used for controlling your VCR are described here. They have generally the same functions as their counterparts on the front panel, but there are some differences:

- Any VCR tuner channel may be selected by pressing

two of the **DIGITS** on the hand unit. Press **0** first to select tuner channels 1 through 9.

- Separate buttons turn the VCR on and off.
- To record simply press the Record button. It is not necessary to press Play and Record at the same time.

Note: When you use Channel Up or Down, the VCR uses its internal scan list of channels, not the scan list that you programmed into the hand unit.



Installation

LOCATION

Choose a location that is convenient, but away from sources of heat such as direct sunlight and heating units. If the VCR is to be installed in an equipment rack or cabinet with other devices, be sure that there is adequate ventilation at the back and around the sides of the components. The VCR should not be placed on or directly above a stereo amplifier because of the heat that rises from the amplifier.

Do not place the VCR on a rug or carpet because the pile will obstruct the ventilation holes on the bottom. Choose a flat surface at least as large as the VCR so that it rests on its mounting feet. Otherwise the ventilation holes on the bottom will be obstructed and overheating can damage the instrument.

Some TV sets may cause interference in home VCR's. To avoid interference and get the best performance from your VCR, follow these guidelines:

- When placing the VCR under a TV keep at least 18 inches between the bottom of the TV and the top of the VCR.
- If interference is present when the VCR is used on top of the TV or at the 18-inch distance below the set, move the VCR to a position beside the TV.
- If interference continues after all the above, call your dealer or service representative.

ANTENNA INSTALLATION ACCESSORIES

These accessories come with your VCR. Use the ones you need to connect the antenna to the VCR and TV.



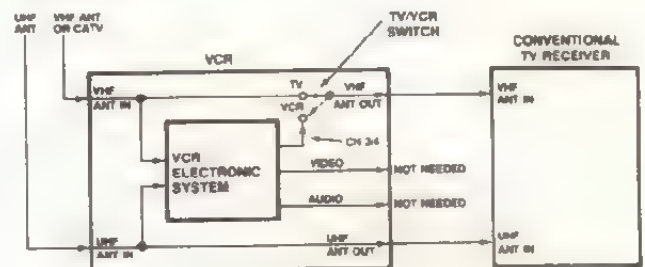
5 ft 75-ohm round (coaxial) connector cable
(RCA Accessory No. AH004)



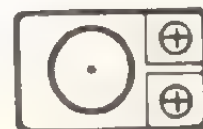
5 ft 300-ohm flat (twin-lead) connector cable

BASIC ANTENNA CONNECTIONS

The drawing below shows schematically the antenna connections for your TV and VCR. Your VHF antenna (or Cable TV) lead-in connects to the VHF antenna input of the VCR, and the lead-in from your UHF antenna, if you have one, connects to the UHF antenna input of the VCR. Signals from both antennas are always connected internally to the VCR tuner. UHF antenna signals are also connected internally to the VCR's UHF antenna output. The signal that is internally connected to the VCR's VHF antenna output depends on the position of the VCR's TV/VCR switch.



75-ohm to 300-ohm VHF matching transformer
(RCA Accessory No. AH011)



300-ohm to 75-ohm VHF antenna adapter
(RCA Accessory No. AH055)

Installation (Continued)

BASIC STEPS FOR ANTENNA CONNECTIONS

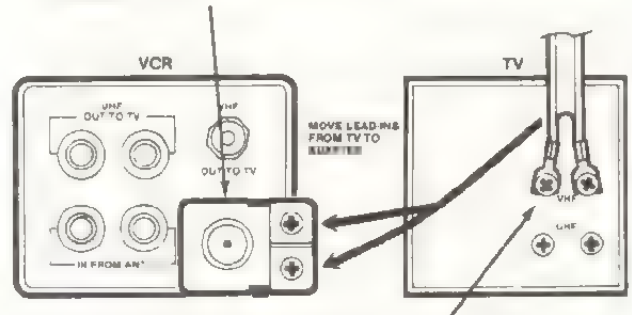
There are four basic steps involved in making the antenna connections. Some of them may not apply to your installation. In many instances your existing lead-ins will fit directly to the VCR's antenna input terminals and the connector cables supplied with the VCR will fit the TV's antenna terminals. If they do not, use the matching transformer and/or antenna adapter that are supplied, as explained in the details for the steps. When you have finished the installation, go to page 15, which tells how to set the clock and check your work.

- 1 Disconnect the VHF antenna (or Cable TV) lead-in from your TV and reconnect it to the VHF antenna input terminal on the VCR.
- 2 Disconnect the UHF antenna lead-in from your TV and reconnect it to the UHF antenna input terminals of the VCR.
- 3 Connect the VHF antenna output of the VCR to the VHF antenna input of the TV. This step is necessary even if you live in a UHF-only area. Use the round cable supplied with the VCR.
- 4 Connect the UHF antenna output of the VCR to the UHF antenna input of your TV set. This step is not necessary if you receive no UHF stations (channels 14 through 83). Use the flat cable supplied with the VCR.

Details for Step 1

If the lead-in from your VHF antenna is flat (twin lead), use the antenna adapter (supplied) to connect it to the VCR. Slip the adapter over the VHF antenna connector on the VCR and then attach the lead-in to the two screws on the adapter as shown in the diagram below.

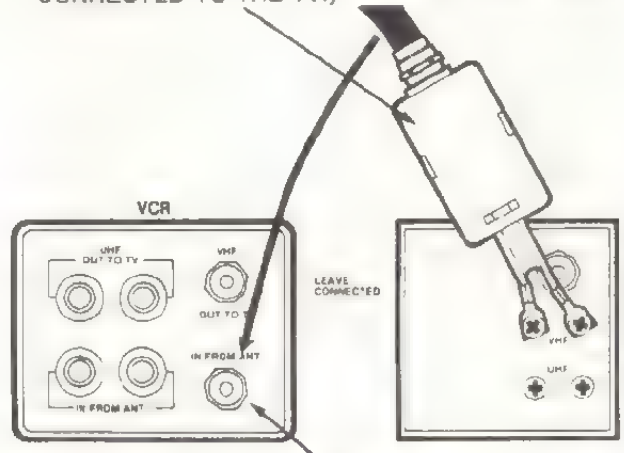
A SLIP ADAPTER ONTO THE VHF ANTENNA INPUT CONNECTOR



B MOVE FLAT LEAD-IN FROM TV TO ADAPTER

The hookup below shows an installation using a matching transformer to connect coaxial (round) cable to a TV that doesn't have a coaxial VHF connector. Disconnect the cable from the transformer and move it to the VCR as shown in the drawing below. Leave the transformer connected for use in Basic Step 3.

A DISCONNECT CABLE FROM MATCHING TRANSFORMER (LEAVE MATCHING TRANSFORMER CONNECTED TO THE TV.)



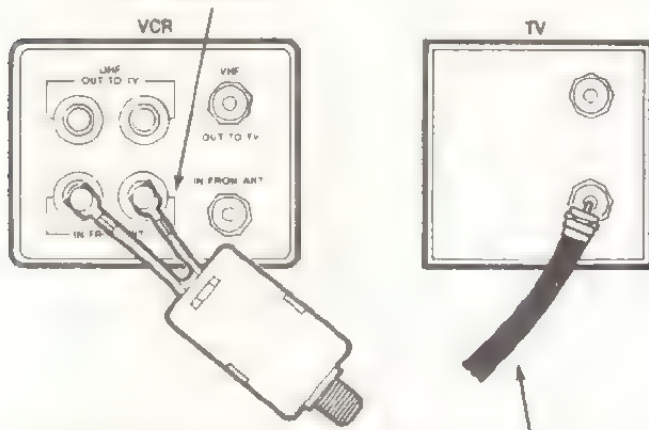
B MOVE CABLE FROM TRANSFORMER TO VHF ANTENNA INPUT ON VCR

Installation (Continued)

Details for Step 2

If your UHF antenna lead-in is round (coaxial) cable, it will not fit the VCR's UHF antenna input. Use the matching transformer (supplied) to adapt the coaxial lead-in to the screw terminals on the VCR as shown in the drawing below

A ATTACH MATCHING TRANSFORMER TO VCR'S UHF ANTENNA INPUT.

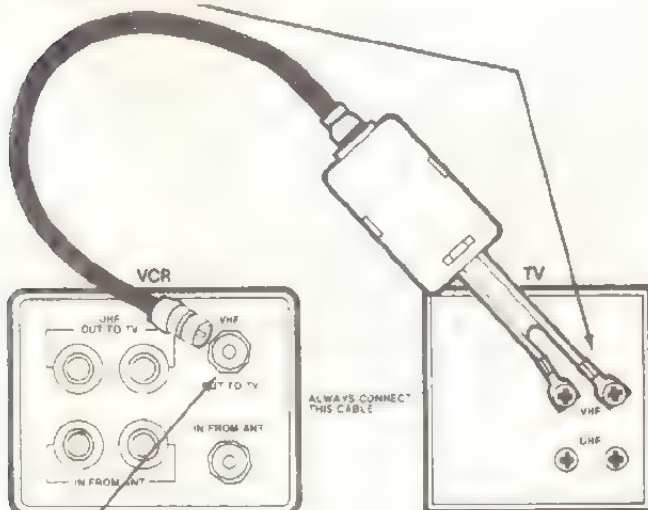


B MOVE ROUND UHF CABLE FROM THE TV TO THE TRANSFORMER.

Details for Step 3

If your TV set has only screw terminals for connecting the VHF antenna lead-in, use the matching transformer (supplied) to adapt the coaxial connecting cable to the TV terminals. Attach the matching transformer to the VHF antenna terminals of the TV and then connect the cable as shown below.

B ATTACH MATCHING TRANSFORMER TO VHF ANTENNA INPUT OF TV.

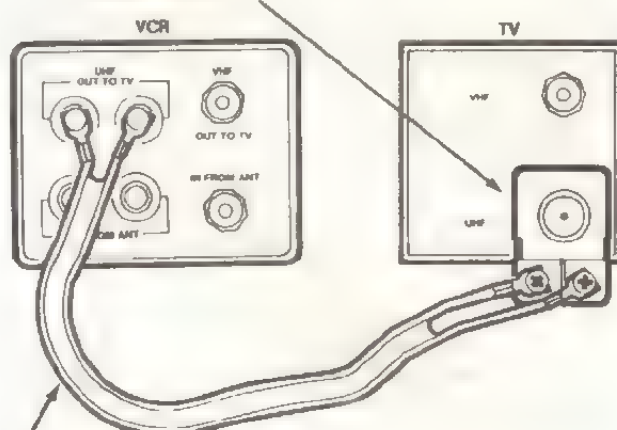


A CONNECT COAXIAL CABLE

Details for Step 4

If your TV has a coaxial connector for the UHF lead-in, use the antenna adapter (supplied). Slip the adapter over the UHF antenna input connector of the TV and then connect the flat connecting cable as shown in the drawing below

A SLIP ANTENNA ADAPTER OVER THE UHF COAXIAL CONNECTOR.



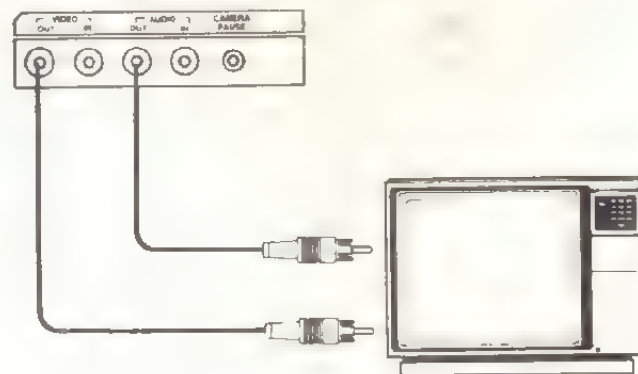
B CONNECT FLAT LEAD-IN.

CONNECTIONS FOR A TV MONITOR/RECEIVER

The basic antenna connections on page 11 may be used for connecting your VCR to any TV set. However, the picture quality from the VCR may be improved if you connect the video and audio outputs of the VCR to the video and audio inputs of the Monitor.

1. Make the antenna connections, following the Basic Steps on page 11, or else use the optional VHF antenna connection on the next page.
2. Connect the yellow video output jack of the VCR to the video input jack of your monitor receiver. Use a cable designed for video. If the monitor has more than one video input jack, see its owner's manual.
3. Use an audio cable, to connect the audio output of your VCR to the audio input of the monitor. If your monitor has a stereo sound system, its right-channel audio input is probably the correct jack for playing monaural sound through both channels.

When you play a tape or monitor what the VCR is recording, switch the monitor to Video Input.



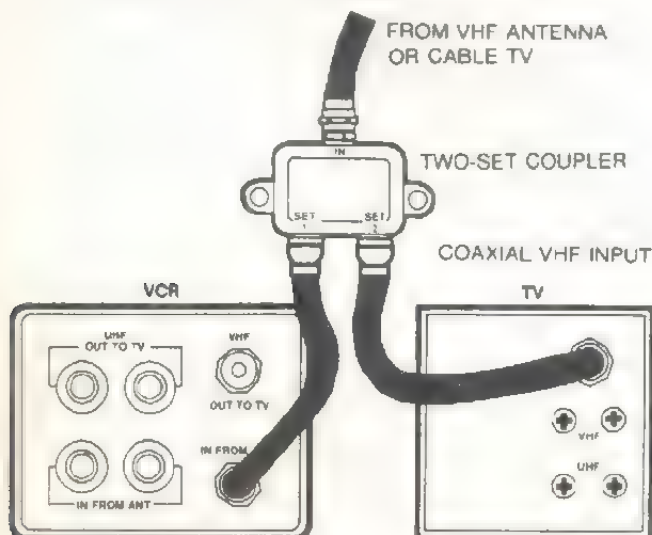
Installation (Continued)

OPTIONAL VHF ANTENNA CONNECTION FOR TV RECEIVER/MONITORS

This optional VHF antenna connection has the advantage that the VCR's VCR/TV switch is no longer needed because the signals from your VHF antenna (or Cable TV) are fed directly to both the VCR and the TV via parallel paths. When you want to play a tape or monitor a recording, you simply switch the monitor to "Video Input". For other viewing switch it to "Tuner Input". You will require a two-set coupler and one additional coaxial connecting cable, which are widely available.

Instead of Basic Steps 1 and 3 on pages 11 and 12, connect the VHF antenna inputs of your VCR and receiver/monitor as shown in the diagram. There is no connection to the VCR's VHF antenna output. Then, if you have a UHF antenna, follow Basic Steps 2 and 4.

When you have finished be sure to follow the instructions in "Connections for a TV Monitor/Receiver" to hook up video and audio outputs.



INDOOR ANTENNAS

If you are using your TV's built-in antenna you can obtain extension leads that will reach to the VCR. This is awkward at best. In nearly all cases reception for viewing and recording will be improved if you install an outside antenna or connect to a cable system. If this is not practical connect a good quality indoor antenna to the VCR and connect the VCR to your TV. The Basic Steps on page 11 apply except that you disconnect the built-in antenna from the TV and connect the new antenna to your VCR.

If you needed to reposition or adjust your built-in antenna for viewing different channels, you will probably need to reposition or adjust the new antenna when you record different channels. Therefore you may prefer to reconnect the TV's built-in antenna while viewing a different channel from the one you are recording.

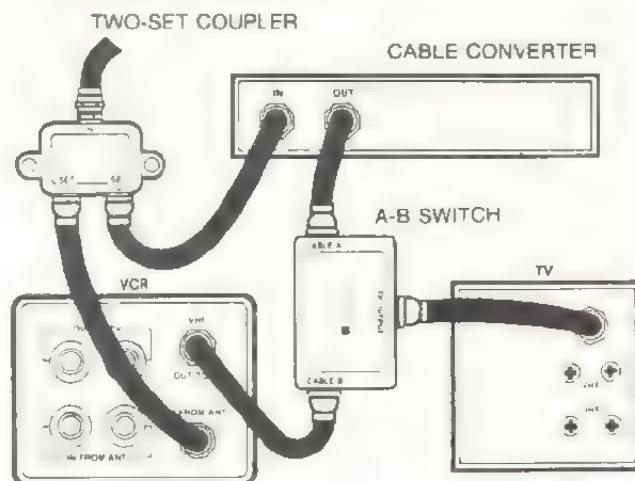
CABLE-TV ANTENNA CONNECTIONS

If you subscribe to Cable-TV service with more than twelve channels, and your TV set is not "cable-ready," you have a "converter box" that changes the cable channels to a VHF TV channel (usually 3 or 4). Your VCR receives Cable TV channels A-2, A-1, and A through W (14 through 36) directly, so it normally does not need to be connected to the converter, but you will still need the converter so you can view one channel while recording another

Note: In rare instances the converter also contains a special decoder that unscrambles "premium-pay" channels. Since most cable companies prohibit recording programs on these channels, the hookup described here should still be used. Consult your cable company for more information.

You will need three round (coaxial) connecting cables in addition to the one supplied with the VCR and the one presently connected between the converter box and your TV. You will also need a **two-set coupler** and an **A-B switch**. These accessories are available from nearly all electronics parts stores

1. Disconnect the cable from your TV's VHF antenna input and connect it to input "A" of the A-B switch. If your TV has only screw terminals for flat lead-in and a matching transformer is connected to them, leave the transformer in place, attached to the TV. Disconnect the cable from it and connect it to the "A" input of the A-B switch.
2. Connect the VHF antenna output of the VCR to the "B" input of the A-B switch.
3. Disconnect the Cable-TV cable from the input of the converter and reconnect it to the input of the two-set coupler.
4. Connect one output of the two-set coupler to the VHF antenna input of the VCR.
5. Connect the other output of the two-set coupler to the input of the converter.



The operating instructions in this manual apply, with these additions

1. When you want to view the picture coming from the VCR, set the A-B switch to "B." Use this switch setting for VCR playback and for monitoring the program you are recording. When the VCR is stopped, you can view whatever Cable-TV channel you select with the VCR tuner.
2. When the VCR is turned off, you can view channels 2 through 13 with the A-B switch set to either "A" or "B," but it must be set to "A" for viewing the other Cable-TV channels
3. Set the A-B switch to "A" when you want to view one channel while recording another one.

Installation (Continued)

CONNECTING THE VCR TO ANOTHER VCR

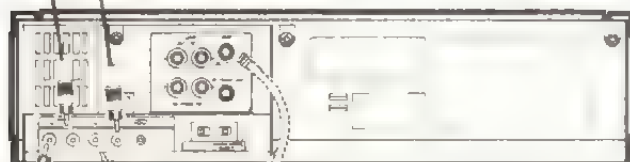
The illustration shows how to connect the outputs of your VCR to another VCR for reproducing a tape. VCR "A" is used to play the cassette and VCR "B" records the playback. VCR "B" should remain connected to the TV or monitor/receiver so you can observe. It is preferable to play the original tape on the VCR that was used to record it. This will avoid having to make tracking adjustments.

CAUTION: The unauthorized recording of television programs and other materials may infringe the rights of others.

BACK OF VCR "A"



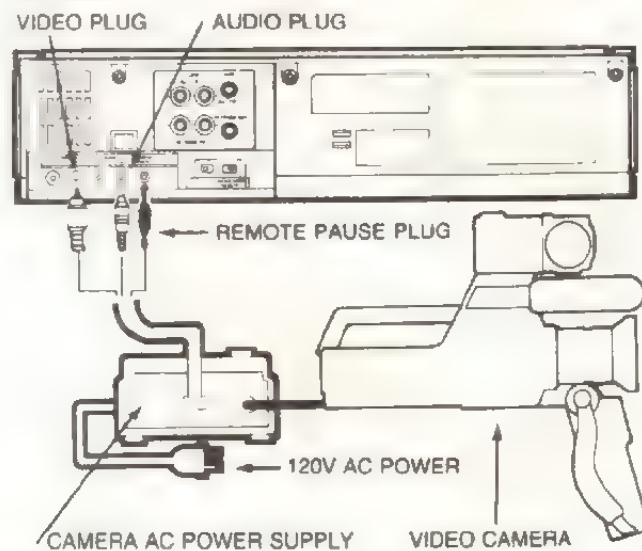
BACK OF VCR "B"



TO TV
TO MONITOR VIDEO INPUT
TO MONITOR AUDIO INPUTS

CONNECTING THE VCR TO A CAMERA

In addition to the camera itself, you will need a **Camera AC Power Supply** (RCA Model CPS03). Plug the camera cable into the power supply and then connect the cables from the power supply to the VCR as shown in the illustration below.



Initial Turn-On

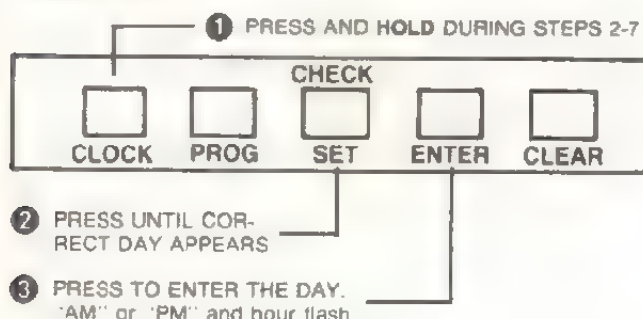
SETTING THE CLOCK

The electronic clock/calendar in your VCR must be set before you can use the timer for unattended recording. When you first plug in your VCR, the clock will read "----". Any time power is interrupted you will see this same display when it is restored, and you will have to reset the clock and re-enter your programs in the timer.

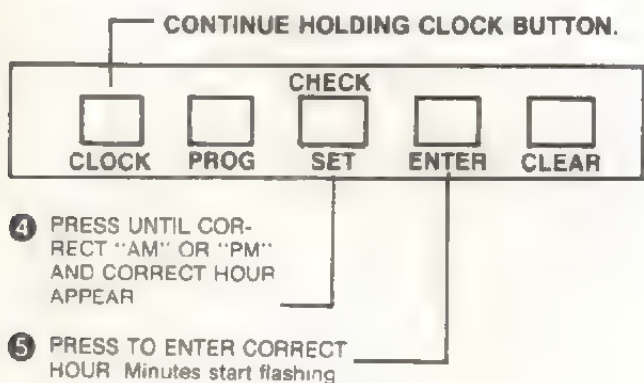
You can set the clock except when it is making a Timer or Express Recording.

When you press **SET** in steps 2, 4 and 6, the setting changes rapidly. As you approach the desired setting release it momentarily and press it again repeatedly to set the desired time. If you go beyond the desired setting, the sequence will repeat if the button is held down.

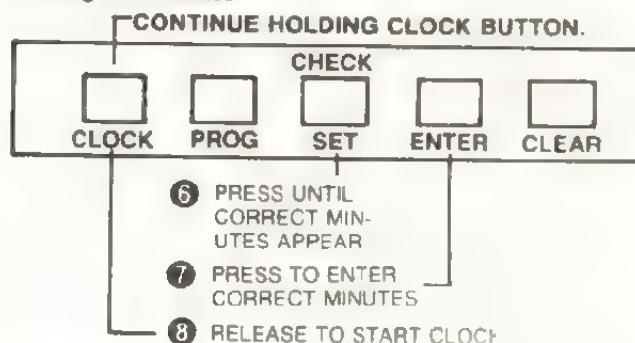
Setting the Day



Setting the Hour



Setting the Minutes



CHECKING THE INSTALLATION

Your VCR was shipped from the factory with the tuner already preset for channels 2 through 13. You can select each of these channels by pressing the "Channel Up" or "Channel Down" button so you can check your installation. Detailed instructions for operating the VCR tuner are on the following pages.

After you have turned on the VCR and set its clock, turn on your TV. Then:

1. Be sure the Recording Input Selector on the front panel is set to "TUNER". (The LINE indicator light is off.)
2. Decide whether you want to view your VCR on Channel 3 or Channel 4 of the TV. If one of these channels is vacant in your area, you should use it. Otherwise pick the channel you view less.
3. Set the channel switch on the back of the VCR to whichever channel you have chosen, and tune your TV to the same channel.
4. Use the VCR's Channel UP/DOWN buttons to select the VHF channels that you normally receive. You may need to fine tune the TV for best reception. If you receive only UHF channels, you will have to preset your VCR tuner to them before you can proceed. Refer to the following two pages and then return to Step 5.
5. Tune your TV to the various channels that you normally receive. You will get only snow on the VHF channels because the VCR is in the "VCR Mode" but the UHF channels will be normal. If this is not the case, return to the antenna installation section and recheck your connections.
6. Press the VCR/TV switch. This disconnects the VCR tuner from the TV and reconnects the TV to your VHF antenna or Cable-TV system ("TV Mode"). Notice that the "VCR" light went off. Now you can receive the VHF channels as always.
7. Press the VCR/TV button again. This reconnects the TV to the output of the VCR tuner and the "VCR" light turns on. Retune your TV to the VCR channel (3 or 4) to receive VHF channels from the VCR tuner.
8. Turn off the VCR by pressing **POWER**. Once again the TV is connected to your VHF antenna (or cable TV) and it can receive all the VHF stations in your area.

Channel Tuning Instructions

CHANNEL TUNING INSTRUCTIONS

Your new VCR uses an advanced Voltage Synthesis (VS) tuning system that allows you to receive all VHF and UHF TV channels (or up to 37 cable channels).

Your VCR has been preset at the factory to receive the standard VHF TV channels (Channels 2 through Channel 13). Once you have installed your VCR, you simply push the Channel Up or Channel Down button to change to the next, or previous channel. Since all channels from Channel 2 to Channel 13 have been preset in the VCR's "Scan List," the VCR can stop at any channel between 2 and 13 depending on how long you hold down the Channel Up or Channel Down button.

The "Scan List" is a list of the channel numbers on which the tuner will stop when you press Channel Up or Channel Down. The scan list is stored in the tuner's electronic memory and it is not affected by power interruptions.

CHANNEL TUNING CONTROLS



Deleting Channels from the "Scan List"

It is likely that not all channels from 2 through 13 are active in your area. If that is the case, you can delete the inactive channels from your VCR's "Scan List," so that the VCR only stops on the channels that are used in your area. Use the following procedure to delete channels that you don't use.

1. Use either the Channel Up or Channel Down button to select a channel that you want to remove from the "Scan List."
2. Move the Select/Norm switch to Select.
3. Press the Skip button.
4. Return the Select/Norm switch to the Norm position.

Now when you press Channel Up or Channel Down, the VCR will not stop on the channel that you have deleted. You can repeat the above procedure to delete any other channels that you do not want to have in the "Scan List."

You can also use the above procedure to eliminate channels that are active in your area from the "Scan List" — for example, you might want to eliminate a channel that you don't watch often. If you do this, you will notice that the sound goes off when you press the Skip button. This is to tell you that the channel has been eliminated from the "Scan List."

Note: If you are using the RCA Digital Command Center to operate your VCR, you can still tune the VCR to channels that have been eliminated from the "Scan List" by entering the channel number (08, 11, etc.) directly.

Adding Channels to the "Scan List"

If you have accidentally eliminated a channel that you want to receive from the "Scan List," or later change your mind, and want to add a channel back, simply follow the procedure below.

1. Move the Select/Norm switch to the Select position.
2. Press either the Channel Up or Channel Down button until the channel that was previously eliminated is displayed.
3. Press the Skip button. You should notice the sound come back on when you press the Skip button.
4. Return the Select/Norm switch to the Norm position.

Now when you use the Channel Up and Channel Down buttons, the VCR will stop at the channel you just added.

IMPORTANT NOTE: If you make a recording, and get a picture, but no sound, the Select/Norm switch is probably in the Select position. Follow the above procedure to add the channel to the "Scan List," and be sure to return the switch to the Norm position.

Tuning New Channels

If you live in an area where there are UHF channels, or if your VCR is connected to a cable TV system with more than 12 channels, you will need to tune these additional channels and add them to the VCR's "Scan List."

The Band, Tune Up, and Tune Down buttons are used to tune additional channels. You must first tune the channel by using the procedure below before you can add it to the VCR's "Scan List."

1. Move the Normal/Select switch to Select.
2. Use the Channel Up or Channel Down buttons to change the channel number in the VCR's display until the number of the channel that you want to tune appears.
3. Refer to the table on the next page to determine which band the channel that you want to tune is in. The band is indicated by the letter L, H, C, or U that is displayed at the left side of the VCR display.
4. Press the Band button until the proper band is indicated.
5. Determine what program is on the channel that you want to tune. You can do this by checking your TV listings or by tuning another TV to the channel you are tuning.
6. Press and hold the Tune Up button until you see the program that is on the channel that you are tuning. If you miss it, you can use the Tune Down button to "back up." Fine tune the channel by briefly pressing the Tune Up and Down buttons until the picture is clear.

NOTE: When either Tune Up or Tune Down is pressed, the tuner first scans slowly (fine tuning) for approximately 2 seconds, then scans very quickly (normal tuning). When you want to fine tune a channel, be sure not to press the Tune Up or Tune Down buttons for more than about two seconds at a time.

Channel Tuning Instructions

NOTE: If you hold Tune Up long enough, the tuner will scan through all the channels in a band, and will automatically start scanning the next band. If you are having trouble finding a channel, make sure you are still in the right band by looking at the band indicator (L, H, C, U) on the left side of the VCR's display. Use the Band button to change to the proper band, if necessary.

- Once you have finished tuning the channel using the Tune Up and Tune Down buttons, return the Select/Norm switch to the Norm position.

Automatic Fine Tuning

When you first tune a channel using the above procedure, you "fine tune" the channel by pushing the Tune Up and Tune Down buttons briefly, until the picture is clear.

When the Normal/Select switch is returned to the Norm position, the Automatic Fine Tuning (AFT) is turned on, and the channel "locks in." The AFT automatically optimizes the fine tuning adjustment.

If your reception of a channel is marginal due to ghosting, the picture may sometimes be improved by manually tuning for the best picture, then turning AFT off for that particular channel.

To see if turning AFT off will improve the picture, use the Channel Up and Down buttons to tune to the channel in

question. Then move the Select/Norm switch to the Select position and carefully fine tune the picture with the Tune Up and Tune Down buttons. Return the Select/Norm switch to Norm and observe the picture quality. If it was better when the switch was in the Select position, the AFT should be turned off for that channel.

You can turn AFT off or on for each individual channel by following the procedure below.

- Use the Channel Up and Down buttons to tune to the channel in question.
- Move the Select/Norm switch to Select.
- Press the Tune Up and Tune Down buttons to fine tune the channel until the picture is clear.
- Push the AFT Off button. "AFT" will disappear from the display.
- Return the Select/Norm switch to Norm.

To restore AFT operation to a channel, simply follow the procedure below.

- Use the Channel Up and Down buttons to tune to the channel in question.
- Move the Select/Norm switch to Select.
- Push the AFT Off button. "AFT" will appear in the display.
- Return the Select/Norm switch to Norm.

Channels in Each Tuner Band

The channels are listed in the order from left to right that they will occur when tuning through each band.

TUNING DOWN (▼) <-----> TUNING UP (▲)

Band L: 2 3 4 5 6

Band H: 98(A-2) 99(A-1) 14(A) 15(B) 16(C) 17(D) 18(E) 19(F) 20(G) 21(H) 22(I) and 7 8 9 10 11 12 13

Band C: 23(J) 24(K) 25(L) 26(M) 27(N) 28(O) 29(P) 30(Q) 31(R) 32(S) 33(T) 34(U) 35(V) 36(W)

Band U: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 through 82 83

Band L is used for VHF or cable channels 2 through 6.

Band H is used for VHF or cable channels 7 through 13, cable channels 98 99 and 14 through 22 which are called A-2, A-1 and A through I by some cable companies.

Band C is used for cable channels 23 through 36, which are called channels J through W by some cable companies.

Band U is used for UHF channels 14 through 83.

Broadcast Reception from Translators

If you live in an area served by a translator, you may receive Channel 11 on Channel 71, for example. You can program the tuner of your VCR to receive the station when you select Channel 11, if you prefer.



Cable TV Channel Assignment

Cable-TV operators sometimes change the channel frequencies for technical convenience. Therefore the channel number your cable system uses for a station may not be the same as the channel that was broadcast. Since your VCR tuner can have any station on any of its 80 channels, you can preset your VCR tuner to receive the channel on whichever number you prefer.

Your VCR can use the following numbers as TV channel presets: 00, 01 through 72, 91, 92, 95 through 99.



Operating Guides

The next three pages contain step-by-step procedures for using your VCR. The first four guides are for the basic functions of your VCR and TV. They tell you how to ready the VCR for recording and playback and give the steps for normal TV viewing, recording a program off-the air, and playing back the recording. These guides are on facing pages so you can refer to all of them at the same time. After you have mastered the basic procedures you should proceed to Guides 5 and 6 for Timer and Express Recording.

Detailed instructions for programming the timer, Timer Recording, Express Recording and additional information follow the operating guides. The illustration at the bottom of this page shows how to insert and remove the video cassette.

CAUTION: The unauthorized recording of television programs and other materials may infringe the rights of others.

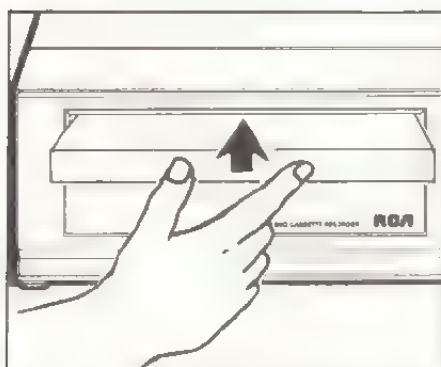
Instructions included on the Following Pages:

• Guide 1: Preliminary Setup	19
• Guide 2: Normal TV Viewing	19
• Guide 3: Basic Recording	20
• Guide 4: Basic Playback	20
• Guide 5: Express Recording	21
• Guide 6: Timer Recording	21

Inserting and Removing Cassettes

Power must be on before you can insert or remove a cassette and the cassette should be rewound before you remove it

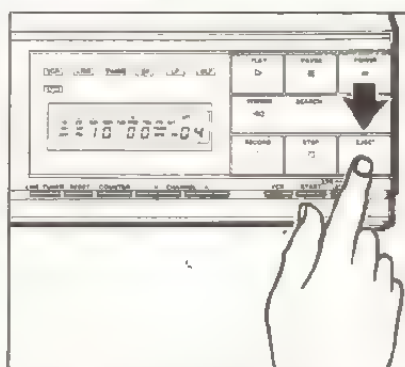
To Insert:



Turn on the VCR and then push the cassette through the door until the VCR mechanism pulls it into the compartment

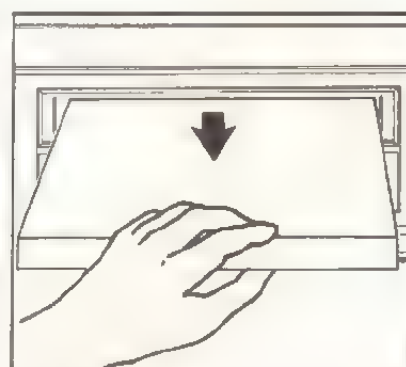
The "Cassette In" light on the front panel turns on when the cassette is in place.

To Remove:



Power must be on and the cassette should be rewound before you remove the cassette.

Press **EJECT**. The cassette will come partially out of the compartment so you can remove it from the VCR.

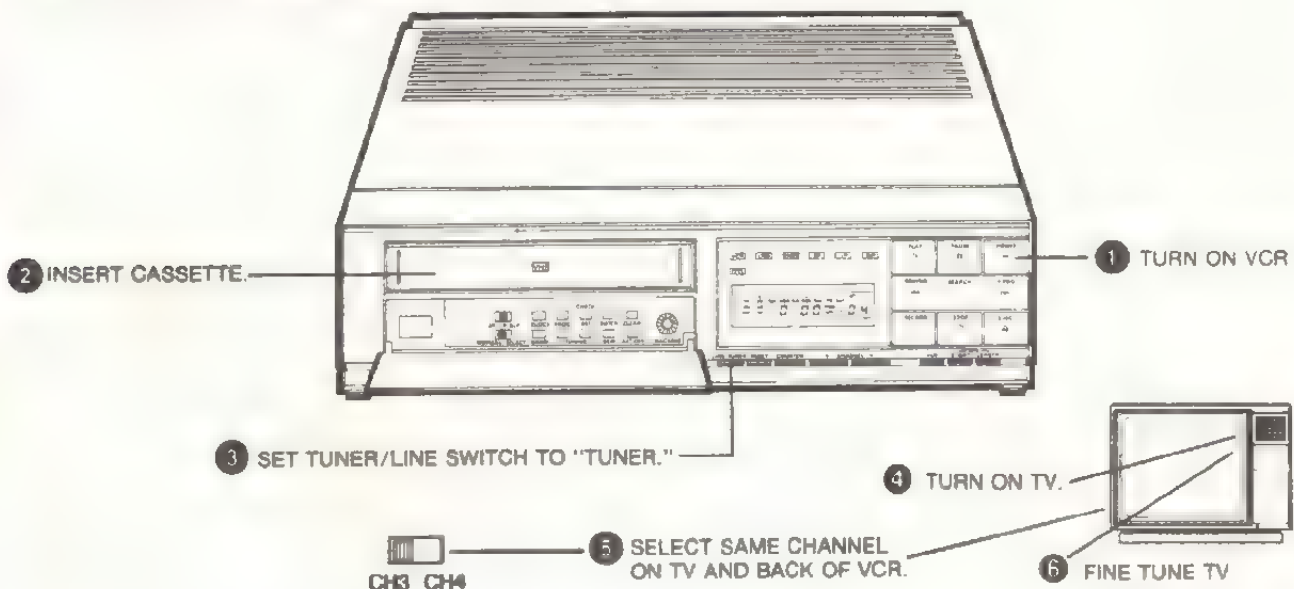


Preliminary Setup

Guide
1

These are the preliminary steps you should complete before recording or playing your VCR. If your VCR plays through a TV Monitor/Receiver by way of the video and audio outputs, the channel switch on the back and the

VCR/TV switch on the front of the VCR are not important. In this case, switch the monitor's input to "Video" for using the VCR.

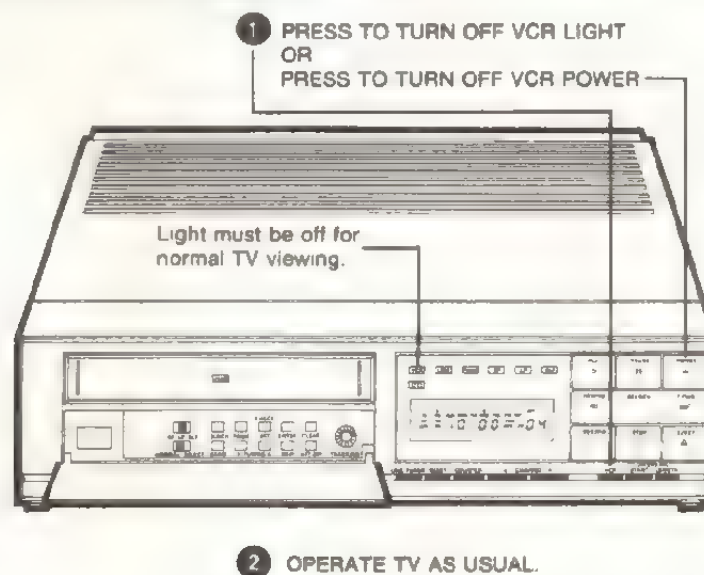


Normal TV Viewing

Guide
2

When you want to watch TV and the VCR is off, operate your TV as always. If the VCR is on, either turn it off, or press the **VCR** switch. When the VCR light is off, the VCR has no effect on your TV, but the VCR can continue re-

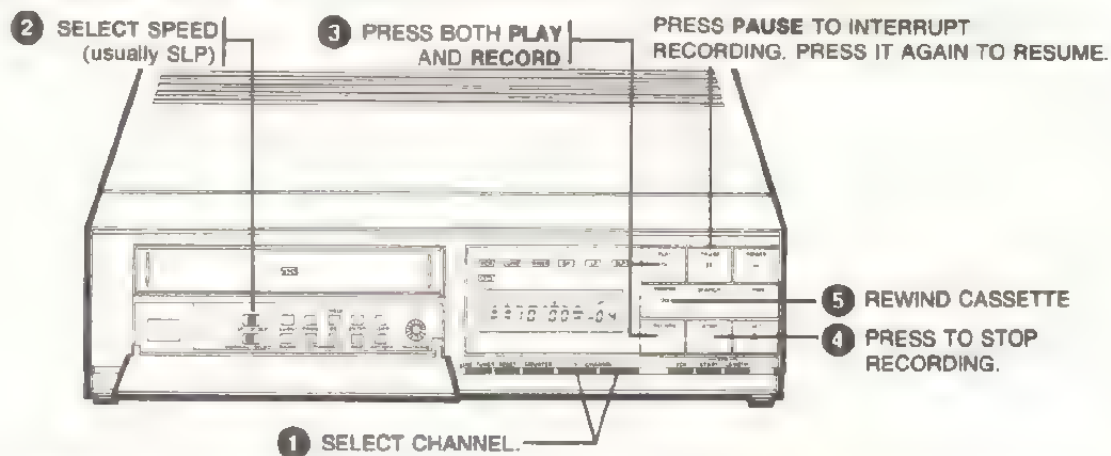
ording the channel you selected. To check back to see if the program you are recording is finished, for example press **VCR** and tune the TV to the VCR channel (3 or 4)



Guide 3

Basic Recording

Do the preliminary setup according to Guide 1. Then follow this guide to record a TV broadcast.



Viewing Another Channel While Recording

The recording procedure is exactly the same as above. Any time you choose, press the VCR/TV switch on the front panel. Now tune your TV to the channel you want to watch. The recording will continue. There is more information in Guide 2 on page 19.

If you have a TV monitor/receiver change its input selec-

tor from **VIDEO** to **TUNER** when you want to watch another channel. Change it back to **VIDEO** to resume watching the channel being recorded.

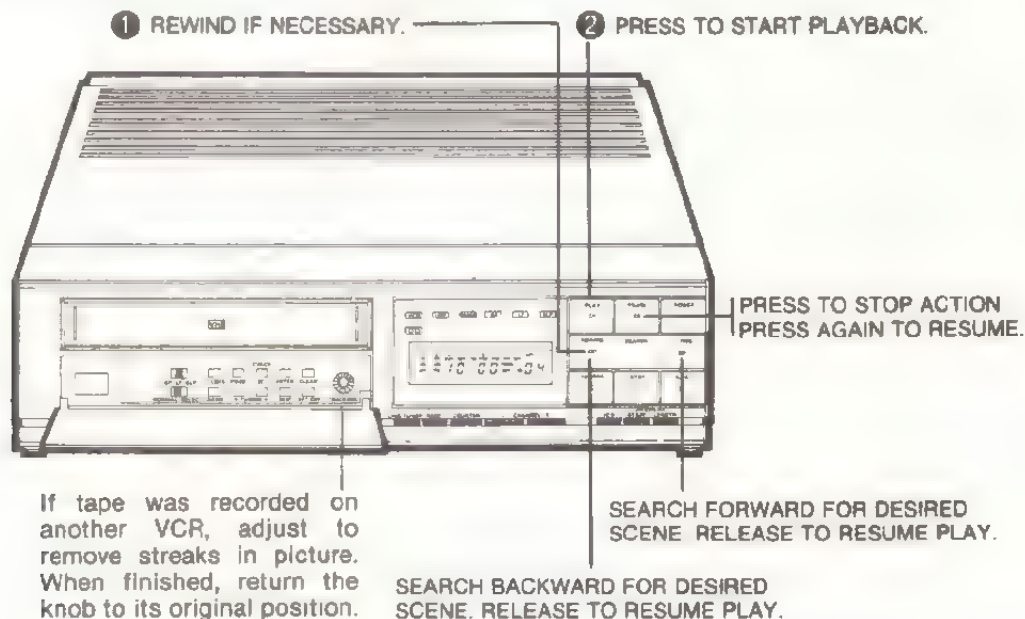
Either type of TV may be turned off while you are recording, since its only relevant function is to let you see the program you are recording. The TV may also be used for playing TV games or other purposes as you record.

Guide 4

Basic Playback

If you have just followed the steps in Guide 3 for making a recording, the preliminary setup is already done and all you need to do for playback is rewind the tape, and press **PLAY**. Otherwise, do the preliminary setup in Guide 1 and

then press **PLAY**. (Step 3 in Guide 1 is not important for Playback.) The data below the illustration tell how to use the Search, Pause, and Tracking controls.



Express Recording

Guide

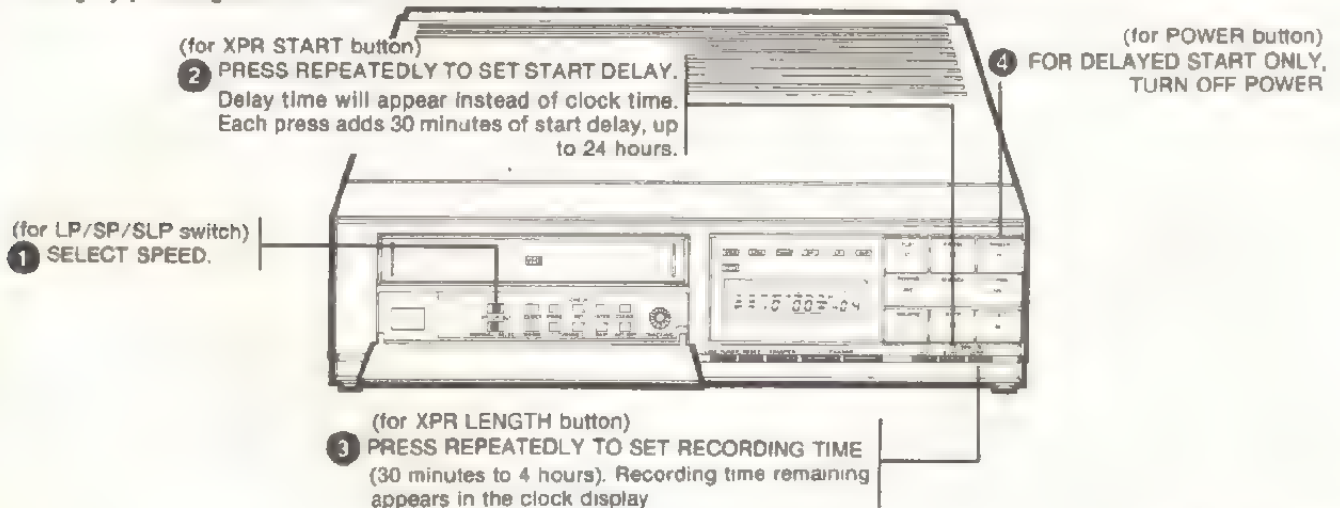
5

First do the preliminary setup in Guide 1. Then follow the steps in the illustration below. Do only Steps 1 and 3 to start recording immediately, but do all the steps for delayed-start recording.

You can increase the recording time while the VCR is recording by pressing **LENGTH** additional times. The clock

display shows the time remaining throughout the recording.

You can stop XPR at any time by pressing **LENGTH** repeatedly until the time remaining changes to 0:00 or by pressing **POWER** and then **STOP** within ten seconds.



Timer Recording

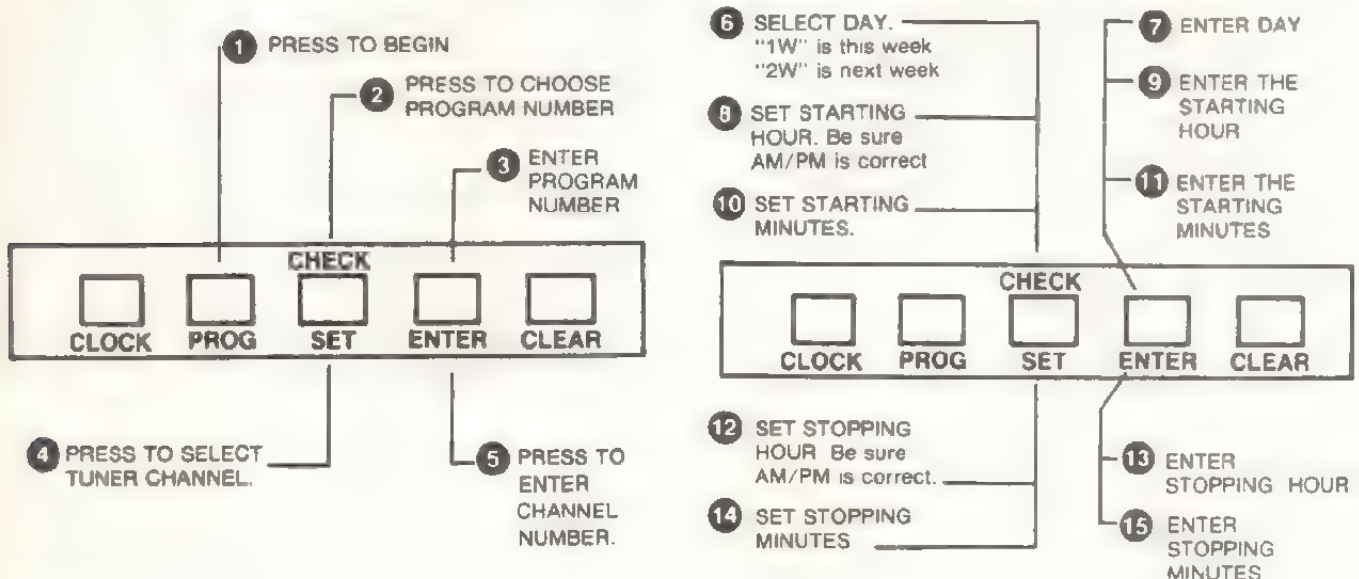
Guide

6

- Perform the preliminary setup in Guide 1.
- Select the recording speed (Step 1 in the drawing above)
- Follow the steps below for programming the timer. (Complete details for timer programming begin on the next page.)
- When you are finished programming the timer, turn the VCR off. This turns on the timer

When the timer turns on the VCR and begins recording, the VCR output is not automatically connected to the TV as it is when you turn the VCR on with the Power button. This prevents a timer recording from interfering with the TV program you might be watching at the time. If you want to monitor what is being recorded, press the VCR/TV switch.

You can stop the recording and erase the timer program by pressing **POWER** and then **STOP** within ten seconds.



Programming the Timer

The programmable clock/timer permits unattended recording of up to four different TV programs. The timer in your VCR is actually a small computer which can turn the VCR on at the time you specify, select a tuner channel, record until the time you specify, and then turn the VCR off. You have to set the clock and preset the tuner channels before you can program the timer. Then you must tell the timer what you want done by **programming** it. The timer can make four different unattended recordings, so you also have to tell it which program number you want to use.

Three timer programs may be used to record either a single TV program (normal timer programs) or TV programs that occur at the same time every day from Monday through Friday (daily program). These timer programs are numbered 1, 2, and 3.

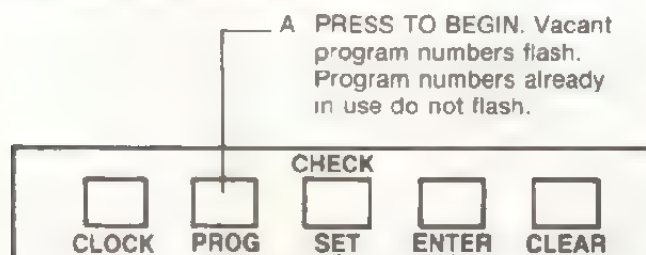
A fourth timer program is used to record a TV program that occurs on the same day of each week (weekly program). This timer program is designated "W." The procedure for setting the timer for a normal program is given in detail here. The variations in the procedure for setting up a daily program and weekly program follow it.

You have about one minute to do each pair of set-and-enter steps in the programming procedure. If you do not proceed to the next step, all entries are erased and you must start over.

You will find that the information the timer requires next will be identified by flashing numbers or characters in the display. When you provide the information it appears in the display and continues flashing. Then you enter the information into the timer's memory by pressing **ENTER**. The information you just entered stops flashing and the next information the timer requires starts flashing.

If you make an error press **CLEAR** and repeat the programming steps.

[1] Select the Program Number



B. SELECT PROGRAM NUMBER 1, 2, OR 3. If the program is in use, new entries will erase old ones.

C. ENTER PROGRAM NUMBER. Channel number begins flashing.

[2] Select Channel Number

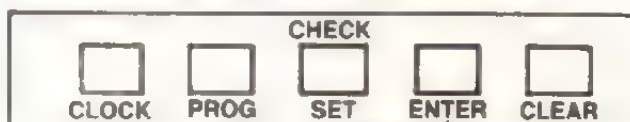


A. SELECT TUNER CHANNEL. The Channel UP/DOWN buttons also work.

B. ENTER TUNER CHANNEL. Present day of the week begins flashing.

[3] Select Day for Recording

As you press **SET/CHECK** you advance from the current day of the week, **TUE** for example. In this example, the **1W** light goes out and the **2W** light comes on when you advance from **MON** of this week to **TUE** of next week. This indicates that your recording will begin on the selected day of the following week. The first week (**1W**) is always the seven days beginning with the present day.



A. SELECT DAY (current day or any day up to 2 weeks from present).

B. ENTER DAY CHOSEN. The hours begin flashing.

[4] Set Starting Hour

When you press and hold the button, the hour in the display will begin advancing rapidly. The "AM" light comes on when you reach midnight. It turns off and the "PM" light comes on when you reach noon. Release the button before you get to the hour you want, and press it again repeatedly to set the hour to start recording. If you "overshoot" repeat the procedure. Be sure you have selected **AM** or **PM** as desired.



A. SET HOUR TO START RECORDING. Be sure AM/PM is correct.

B. ENTER HOUR YOU CHOSE. Minutes begin flashing.

Programming the Timer (Continued)

[5] Set Starting Minute

As you hold the button, minutes advance to 60 and start over with 00. Release the button and press it again to avoid passing the desired minute.



- A. SET MINUTE TO START RECORDING.
- B. ENTER STARTING MINUTE.
The hours begin flashing.

[6] Set Stopping Hour

Setting the stopping time is just like setting the start time except that OFF is lighted in the display window.



- A. SET HOUR TO STOP RECORDING. Be sure AM/PM is correct.
- B. ENTER HOUR YOU CHOSE.
Minutes begin flashing.

[7] Set Stopping Minute



- A. SET MINUTE TO STOP RECORDING.
- B. ENTER MINUTE YOU CHOSE.
Display shows the start time, then changes to show the stop time, then the display returns to the current time. "PROG" appears in display to indicate entries are completed

Daily Program

To record the same TV program every day from Monday through Friday, do steps 1 and 2. Step 3A is different: Press **SET/CHECK** until all five week days are displayed. (This is the last display before the cycle repeats.) Press **ENTER** as in Step 3B and complete the remaining steps as above. The VCR will record the program each week day indefinitely.

Weekly Program

The procedure is the same as for a normal program except that in Step 1B, choose **W** instead of a number. The program on the selected channel and time will be recorded indefinitely the same day each week. You can also use this timer program for recording a normal (one-time) TV broadcast. After it has been recorded, simply clear the timer program as explained below.

Checking the Timer Programs

You cannot check the timer programs when the VCR is in XPR mode. Programs can be checked any other time, including when it is recording a timer program.

1. Press **SET/CHECK**. The display will show the lowest numbered timer program first. "ON," the starting time, and starting date appear first; followed by "OFF," the stopping time, and date.
2. Press the Set/Check button again, before the stopping time disappears, to check each additional timer program. If you do not press the Set/Check button, the normal display will reappear in a few seconds.

Clearing a Timer Program

Normal timer programs clear automatically when the recording is finished, but daily and weekly programs continue indefinitely. All programs are erased if power is interrupted and the clock stops.

To clear any program, press the Set/Check button until the desired program is displayed. Then press **CLEAR**. A timer program is automatically replaced by new data when you enter it in the same program number.

Stopping a Timer Recording While in Progress

Press **POWER** and then press **STOP** within 10 seconds. The program that was being recorded will be erased from the timer's memory.

Timer and Express Recording

TIMER RECORDING CHECKLIST

Before your VCR timer can record a TV broadcast, all the conditions listed here must be fulfilled. They are presented as a checklist you can use until you are familiar with your VCR.

- [] Cassette inserted in the VCR (page 18).
- [] Cassette has its safety tab in place (page 3). If the tab has been removed, the VCR will automatically eject the cassette when you turn the power off and the timer comes on.
- [] Cassette length and recording speed are adequate for program(s) to be recorded (page 3).
- [] Recorder Input switch set to **TUNER**.
- [] Clock set to correct time and date (page 15).
- [] Timer has been programmed. **PROG** is displayed if it has been.
- [] Power has been turned off. The timer light comes on automatically if the timer has been programmed, but it will flash if no cassette is in the VCR.

Notes:

1. The timer light will not turn on if there is no program in the timer.
2. A timer program will not be recorded if the VCR power is on when the program is to start. If you turn off the VCR during the interval when the VCR timer is programmed to record, it will record the rest of the program.
3. The timer cannot begin recording if the VCR is already recording with XPR, and vice versa.
4. When the VCR turns on automatically to make a timer recording, it remains in the "TV Mode." Press the VCR/TV switch if you want to monitor the recording.
5. You can stop the VCR during a timer recording by pressing **POWER** and then pressing **STOP** within ten seconds.

EXPRESS RECORDING (XPR)

Express recording is a method of unattended recording that does not require programming the timer. It is especially convenient if you are interrupted while viewing a program and want to record the balance of it and then have the VCR turn off. By using the delayed start feature you can delay the recording start up to 24 hours. Although you do not need to program the timer for XPR, the clock must be set.

You can view the program with the VCR tuner as it is being recorded with XPR, or view some other program with the TV tuner if you prefer.

XPR with Immediate Start

We will assume that a cassette is in the VCR and that the VCR is stopped and ready to record, or actually recording.

1. Select the channel to be recorded.
2. To start recording immediately, press **XPR LENGTH** twice. This starts recording (or continues if you are already recording) and sets the timer to record for thirty minutes. The XPR light also turns on and remains on until the express recording is completed.
3. Increase the recording time by pressing **LENGTH** additional times. The clock display shows the recording time remaining. As you press "Length" repeatedly, recording time increases.

Keypress	Recording Time
First	0:00 (Turns on XPR function.)
Second	0:30
Third	1:00
Fourth	1:30
Fifth	2:00
Sixth	3:00
Seventh	4:00
Eighth	0:00 (Recording stops.)

4. The time remaining is constantly displayed during XPR and you can extend the time whenever you want by pressing **LENGTH**.

When the recording time has expired, the VCR turns off and the clock display returns to current time.

Stopping an XPR Recording

You can stop XPR by pressing **LENGTH** until time remaining is 0:00, or by pressing **POWER** and then **STOP** within ten seconds.

Delayed Start XPR

You can delay the start of an XPR recording by using the "Start" button. This is convenient if, for example, the present time is 9:15 and you want to record a program that starts at 10:30. Just push **START** until the time you want to start recording is displayed. The starting time may be set to begin on any hour or half hour, up to 24 hours from present.

It is assumed that the VCR is on and prepared to record TV broadcasts.

1. Select the channel you want to record.
2. Press **START XPR** as many times as required to set the start delay.
3. Press **XPR LENGTH** repeatedly to set the desired recording time. See the foregoing table.
4. Turn the VCR off. The timer indicator light will turn on, and XPR will begin at the time you selected.

Delayed XPR will not begin if the VCR is turned on at the start time. You can cancel delayed XPR by pressing **LENGTH** until the recording time returns to 0:00, or by pressing **POWER** and then **STOP** within ten seconds during XPR recording.

Additional Information

PAUSE BUTTON AND REMOTE PAUSE CONTROL

The Pause Button can be used to stop the tape momentarily during either recording or playback. This is useful to prevent recording of unwanted material or to stop the tape during an interruption such as a phone call. Press the Pause Button to stop recording or playback. Press the pause switch again to resume. Pause is designed for momentary interruptions. Do not use for extended periods of time.

NOTE: If the VCR is left in Pause mode during playback for more than approximately five minutes, the VCR will automatically stop.

TAPE COUNTER

If you always reset the tape counter **RESET** when you insert a tape, you can note the counter reading at the beginning of each program you record for future reference. The counter reading is displayed when you press **COUNTER**. The label kit provided with RCA tapes can be used to list programs and counter readings.

MEMORY STOP

When you press **COUNTER** to turn on the counter display, you automatically turn on the "Memory Stop" feature. This means that the cassette will rewind to a counter reading of 0000 instead of the start of the tape. Pressing Rewind again will cause the VCR to rewind to the start of the tape. Since you can reset the counter to 0000 at any point, the feature provides a convenient means of relocating the beginning of a recording or the beginning of a particular segment you want to repeat. This is the procedure:

1. Press **COUNTER** to display the counter reading instead of the time. (Pressing it again restores the time display and also turns off the Memory Stop function.)
2. Mark the desired point by pressing **RESET**. You can do this either before or during recording or playback.
3. Press **STOP** when you are finished and then press **REWIND**. The cassette will rewind to counter reading 0000 and stop.
4. Press **PLAY** to view the segment you have selected, or press **REWIND** to rewind the cassette completely.

TRACKING CONTROL

When you play tapes that were not recorded on the same VCR, black and white streaks may appear in the picture. Adjust the tracking control, located behind the auxiliary control door, in either direction to remove them. Return it to its original position when you are finished.

VERTICAL JITTER ADJUSTMENT

If there is vertical jitter in stop-action pictures (playback Pause) adjust the jitter control on the bottom of the VCR as follows.

1. Turn the VCR on its side so the bottom is facing you.
2. Play a tape that was recorded at SLP speed and press **PAUSE** for stop action.
3. Use the tool supplied with the VCR to turn the adjusting screw in the direction that produces the most stable picture.



Background Information

THE VHS FORMAT

Your RCA video cassette recorder and most other modern recorders use a recording format called "VHS," or Video Home System. This particular format has been adopted by many manufacturers so that a cassette recorded on one VHS recorder can be played back on another VHS machine.

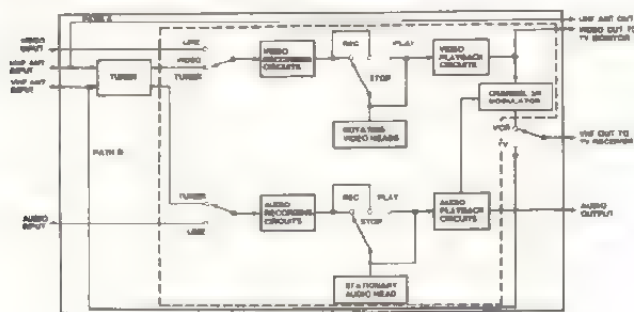
Most modern VHS-type VCR's are equipped to operate at three recording speeds, Standard Play (SP) Long Play (LP) and Super Long Play (SLP). The earliest models did not have the slowest speed, SLP, so they cannot play tapes recorded on other recorders at this speed. Since the LP speed requires more tape but has no particular advantage over SLP, it is seldom used nowadays. All current RCA VHS recorders have all three speeds so that LP tapes from older VCR's can be played.

Recorded tapes that are sold or rented for home viewing are recorded at the fastest speed (SP) because all VHS recorders have this speed, and also because video and audio quality is slightly better at higher speed. On the other hand, the picture quality during search and slow-motion is usually poorer. Only the more expensive VCR's have special heads and electronic circuitry to optimize special effects with SP speed.

BASIC VHS RECORDER

The drawing shows the elements of a basic VCR. All RCA video cassette recorders have these essential elements. The additional features of your VCR will be described later in this section. The switches in the drawing are positioned for recording off-the-air and viewing the same program with a conventional TV receiver.

When you record, your VCR takes the video and audio signals from its built-in tuner (or from the video and audio input jacks) and converts them into electric currents that are sent to the recording heads. The heads produce magnetic fields that polarize the magnetic material that is coated on video tape



The outputs of the recording circuits also go to the playback circuits when the VCR is recording or stopped. This allows you to monitor what is being recorded, or what would be recorded if the VCR were not stopped.

During playback the recording heads are switched from the recording circuits to the playback circuits. The magnetic fields produced by the moving tape produce electrical currents in the heads. The playback circuits convert these currents back into video and audio signals identical to those that originally came from the VCR tuner or input jacks.

Since conventional TV sets have no provisions for using the audio and video directly, a device called a "modulator" is used to convert them back into a standard TV signal on either channel 3 or 4, whichever you select with a switch on the back.

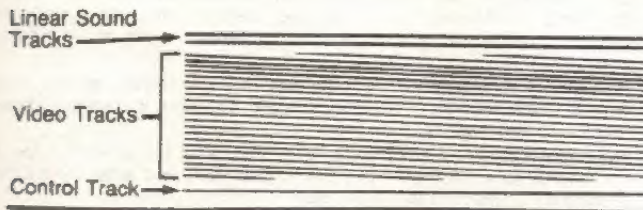
Finally, locate the switch with the labels "VCR" and "TV." When it is in the "TV" position (TV Mode), the VHF antenna input is connected to the VHF antenna output (along "Path B" in the drawing) and the output from the VCR modulator is disconnected. This permits you to use the TV set for VHF reception as if the VCR had not been installed. The VCR never interferes with UHF reception because the UHF antenna input and output are always connected by "Path A."

The VCR/TV switch is operated by the **VCR** button on the VCR's front panel. Each time you press **VCR** the switch moves to the other position. The indicator on the front panel turns on when the switch is in the "VCR" position. Any time you turn the VCR off, this switch goes to the "TV" position. When you turn the VCR on by pressing **POWER** the switch returns to the "VCR" position, but if the VCR is turned on by the timer, this switch remains in the "TV" position.

RECORDING TRACKS

The picture on your TV is made up of many horizontal lines running across the picture tube. The odd-numbered lines are actually displayed first and then the even-numbered lines are displayed. Each set of lines is a "field" and two consecutive fields are called a "frame". Video is recorded diagonally across the tape, and each track contains the information for one field of a TV picture. A field is displayed and recorded in one sixtieth of a second.

Background Information (Continued)



The audio part of the TV program is recorded along one edge of the tape. In a monaural VCR, a wide audio head records and plays back one wide audio track. In a stereo VCR, two narrow heads record and play back narrow tracks. If a wide monaural track is played back with a stereo VCR, both heads pick up the signal and produce identical audio from both output jacks. If a two-track tape is played back on a monaural VCR, the wide head plays the audio from both of them. This compatibility lets you play a stereo tape on a monaural VCR, with both stereo channels mixed, or you can play a monaural tape on a stereo VCR with the same sound coming from both channels.

Another track is recorded on the opposite edge of the tape. This is called the "control track," which is used to record timing pulses. During playback these pulses are used to control precisely the speed of the tape and the rotating heads. A side benefit is that you do not have to select playback speed among SP, LP, and SLP, since the recording speed is recorded on the control track.

STILL PICTURE

The VCR produces a still picture (playback **PAUSE**) by stopping the forward motion of the tape and allowing the

headwheel to continue spinning. The result is that one particular video track is scanned continuously.

This is technically difficult. The tape must be stopped so the recorded track is positioned exactly beneath the spinning heads. Since the tape is now stationary, the relative head-to-tape speed is changed slightly and the angle of the head's diagonal path across the tape is also slightly different. Therefore the head cannot be centered over the recorded track throughout all its length. For these reasons a still picture usually contains some noise and possibly streaks.

All the above problems can be solved, but it is costly and the solution is different for each recording speed. The compensation in your VCR is designed to be most effective at **SLP**, since this is the speed most frequently used for home recording.

SEARCH

The tape is moved forward at some multiple of normal recording speed. Instead of playing back every video track, the heads play a portion of each track as they move past the headwheel. (The horizontal lines you see in the picture are produced as the heads skip from one recorded track to the next.)

Compensating for the changes in head-to-track speed and position to make a nearly perfect picture with "fast motion" is possible, but the cost is prohibitive for a home entertainment VCR. Your VCR is designed to give a good picture when searching tapes recorded at **SLP** speed.

Glossary

A-B Switch — A manually operated selector switch that allows either of two RF signals to be connected to a TV's antenna input — antenna or a video game, for example.

AFT — Abbreviation for Automatic Fine Tuning, an electronic circuit that keeps a tuner precisely tuned to the station.

ALC — Automatic level control. A system of automatically adjusting the level of the audio for recording. ALC avoids the possibilities of recording at too high a volume level, which causes distorted playback.

Antenna Adapter — An antenna accessory used to connect flat lead-in from an antenna (300 ohms) to the coaxial antenna connector on a TV or VCR (75 ohms). It is actually a form of matching transformer, but the term "antenna adapter" is used throughout this manual to avoid confusion. See "Matching Transformer."

Broadcast Stereo — A new system of TV broadcasting which permits the transmission of stereo sound and also an "Audio B" channel for bilingual or other uses.

Cable TV — Television programs disseminated to users by cable rather than by broadcast.

Cassette Length — The length of tape contained in the cassette. This is expressed in minutes of playing time at standard speed (SP) or actual length in meters. Examples: T-60 = 60 minutes; VK330 = 330 meters. See page 3 for more information.

CATV — Community Antenna TV, sometimes Cable TV.

Coaxial Cable — Cable used extensively for conducting high-frequency electrical signals, as from an antenna to a TV set. The cable consists of an insulated wire at the center, surrounded by a conducting sheath made of braided wire or metallic foil (sometimes metallic tubing). The type used for antenna lead-in and interconnecting a VCR and TV (Type RG-59) has an insulating cover on the outside. This is also designated as 75-ohm cable.

Counter — A device that indicates the amount of tape that has been played or recorded. Since the counter actually counts the revolutions of the hub on which the tape is wound, the length of tape between counts constantly decreases as the tape plays.

Coupler — An antenna accessory that divides an incoming signal into two identical output signals (two-set coupler). Each output is about one-half as strong as the input.

Dubbing — Audio: The process of adding audio to a previously recorded video program, or replacing the original audio with new material. Video: The process of replacing part of a video recording with new material.

Dynamic Range — The range of loudness from the softest to the loudest sound that can be recorded or reproduced.

Flagging — The top of the picture waves back and forth during VCR playback. TV's designed before VCR's became popular are more likely to have flagging. Frequently it can be eliminated or reduced by carefully adjusting the Horizontal Hold control. Some flagging is normal when using special effects on tapes recorded in LP.

Flat Lead — See "Twin Lead."

Ghost — A faint second picture on the TV screen, usually to the right. Caused much the same way as echos are caused when sound bounces off some large object.

Head — An electromagnetic device which converts electrical current into a magnetic field for tape recording, or a moving magnetic field into an electrical current for playback. Heads normally can perform either function. See "Basic VHS Recorder" in the background information.

Head Wheel — The wheel upon which the video heads are mounted. The technique of mounting the video heads on a spinning wheel makes it possible to achieve the high speed of the head relative to the tape that is required for video recording.

Input — The electrical signal that passes into a device for recording, display, etc. Also the connector on the device to which the input is connected. See "Output."

Lead-in — A cable used to conduct electrical energy from an antenna to a TV or VCR. See "Coaxial Cable" and "Twin Lead."

Linear Sound — Sound recorded on one or two parallel recording tracks at one edge of the tape. See "Recording Tracks" in the background information.

Matching Transformer — An antenna accessory that permits connection of a coaxial cable (75-ohms) to the screw terminals on a TV or VCR that are designed for flat lead-in (300-ohms). See "Antenna Adapter."

Memory — The ability of an electronic device to store information for subsequent use. Also the device itself.

Memory Stop — A memory in the tape counter that remembers the tape location for counter reading 0000. It stops rewind when this point is reached.

Midband — Cable TV channels A through I (sometimes designated 14 - 22), A-1(99) and A-2(98). Their frequencies are between the FM broadcast band and TV channel 7. The midband channels are never broadcast because this frequency band is used for various types of radio communication.

Monitor — A video display device that has no tuner. Its input is video from a VCR, computer, surveillance camera, etc. The term is frequently confused with "Monitor/Receiver."

Monitor/Receiver — A combination of a TV receiver and video monitor. It has a tuner for receiving TV broadcasts plus video and audio input connectors for connection to a VCR, etc.

Output — The electrical signal that comes out of a device for recording, display, listening, etc. Also the connector on the device from which the output is taken. The output of one device is frequently the input to another.

Program — The series of commands that direct the operation of an automatic device, such as a VCR timer or a computer.

Programming — The process of entering specific commands into the memory of an automatic device. Entering into a VCR timer the channel and time of the broadcast to be recorded is one example.

RF — Radio Frequency. Also the energy broadcast by a radio or TV transmitter, among others.

Simulcast — A contraction of "Simultaneous Broadcast." The sound portion of a TV program is broadcast in stereo by an FM station simultaneously with the TV broadcast.

Snow — Electronics jargon for the random white spots in a TV picture, or the electronic "noise" that causes it. It is usually the result of a weak signal.

Splitter — An antenna accessory that separates the VHF and UHF signals from a combination antenna using a single lead-in. The outputs of the splitter are connected to the separate VHF and UHF antenna inputs of a VCR or TV receiver.

Superband — Cable TV channels J through W (sometimes designated 23 - 36). Their frequencies are above TV channel 13. The superband channels are never broadcast because these frequencies are used for several other purposes.

Timer — A device built into the VCR which permits unattended recording from a specified channel at a specified time.

Track — A narrow band of magnetized particles on a recorded tape. A recorded video tape has several tracks on it as explained under "Recording Tracks" in the background information.

Tracking — The degree of accuracy with which the recorded video tracks on a tape are aligned with the rotating video heads. Imperfect tracking causes a horizontal band of noise in the picture, which is more prevalent when a tape is recorded with one VCR and played back with another, or if a tape has been stretched by repeated use.

Tuner — When used with reference to a VCR, "tuner" refers to the built-in circuitry that tunes to TV and Cable-TV channels and presents the audio and video to both the recording system of the VCR and the TV set that is connected to it.

Twin Lead — A flat cable consisting of two parallel insulated wires for conducting the energy from an antenna to a TV set or VCR. Also called "Flat Lead" or "300-ohm Lead." It is gradually being replaced by coaxial cable, which is generally superior.

UHF — Abbreviation for Ultra High Frequency, which is the frequency band (or spectrum) from 300 MHz to 3000 MHz. TV channels 14 through 83 are in this band.

VCR — Abbreviation for Video Cassette Recorder.

VHF — Abbreviation for Very High Frequency, which is the frequency band (or spectrum) from 30 MHz to 300 MHz. TV channels 2 through 13 and Cable-TV channels A through W are in this band.

VHS — Abbreviation for Video Home System. This is the system of video recording used by RCA and most other home video recorders. See "VHS Format" in the background information.

VHS Hi-Fi Stereo — A method of recording stereo audio with special recording heads located on the head wheel. Compared to conventional audio techniques, this recording method increases the frequency response dramatically and makes it independent of recording speed. Both "Wow" and "Flutter" are virtually eliminated.

Video — The electronic signals used to produce a TV picture or other display. Also the display itself.

VTR — Abbreviation for Video Tape Recorder, of which your VCR is one type.

Wow and Flutter — Changes in the pitch (frequency) of recorded sound caused by variations in tape speed during recording or playback.

Care and Maintenance

CLEANING

Dust exposed surfaces as required, using a soft cloth or the dusting attachment of your vacuum cleaner. Occasionally use the vacuum cleaner to remove dust from the ventilation holes on the top, back, and bottom of the cabinet.

Some of the plastic surfaces are easily scratched and they can be marred by alcohol and various solvents. Glass wax applied with a soft cloth or tissue will restore the original sparkle. Avoid excessive use of oil-based furniture polishes since the materials used in the cabinet are non-porous and the residue will accumulate more dust.

CASSETTE CARE AND STORAGE

RCA Video Cassettes are manufactured to exacting speci-

fications and should provide many hours of enjoyment when used properly. Follow these directions for continued high quality performance.

- When you are finished with a cassette, rewind it and remove it from the VCR.
- Never attempt to force open the cassette door.
- Store cassettes vertically in their protective boxes at normal room temperatures. Avoid extreme heat and humidity. Extreme heat can warp the cassette or cause the tape to stretch excessively.
- Be especially careful to keep dust from entering the cassette and the VCR mechanism. All dust is abrasive and it will cause excessive wear of both the tape and the VCR's recording/playback heads.

Troubleshooting

Sometimes problems can be easily solved by checking a few basic things. Check below before you call for help or take your unit to an RCA Authorized Servicenter or the RCA Service Company. It could save you time and money.

If service should be necessary, RCA Authorized Servicenters and the RCA Service Company are trained and equipped for qualified VCR service and maintenance.

No Power (Indicator won't come on)	<ul style="list-style-type: none"> • Check to see if the player is plugged into an operating outlet.
Does Not Respond to Remote Control	<ul style="list-style-type: none"> • Weak battery in hand unit. • Remote switch (UNIFIED - NORMAL) on the back in wrong position. • Hand unit not aimed at VCR or obstruction between them.
Poor/No Picture for Normal TV Viewing	<ul style="list-style-type: none"> • The VCR/TV switch may be set to "VCR." Switch the VCR to "TV" or turn it off. • TV monitor/receiver set to "Video Input." Switch to an active channel. • Carefully check antenna connections. • If the antenna is routed to the TV through VCR, the VCR must be plugged in.
Snowy/No Picture During Playback	<ul style="list-style-type: none"> • VCR/TV switch set for TV viewing. • Make sure the TV channel selector matches the channel you have selected on the back of the VCR (3 or 4). • Make sure the TV is fine tuned. • Check the video cable connections between the VCR and a TV monitor/receiver. • Make sure the TV monitor/receiver is set for "Video In." • Try another tape. • Very dirty tape has left deposits on VCR heads. See page 3 for head cleaning. • Some snow and streaks are normal during Search and Stop-Action play.
No Sound From Recorded Tape	<ul style="list-style-type: none"> • SELECT/LOCK switch left in the "SELECT" position when recording off-the-air TV. Return it to NORMAL.
Black and White Streaks in Picture During Normal Playback	<ul style="list-style-type: none"> • Adjust the tracking control. • Tape stretched (poor quality or worn out).
Will Not Record or Play	<ul style="list-style-type: none"> • Stop light blinks if there is moisture in the VCR. Leave the power on and wait until the light is on continuously. If liquid entered the VCR, unplug it and have it inspected. • No cassette in VCR. • Eject and reinsert cassette. • Broken tape — try another cassette.
Will Not Record	<ul style="list-style-type: none"> • VCR is in the pause mode. • Safety tab removed from cassette.
Timer Recording Not Made	<ul style="list-style-type: none"> • Program entered incorrectly (wrong channel or times). • Power interruption. (Clock on the front panel shows "—:—:"). • Clock was not set accurately (including AM/PM). • Program exceeded cassette length or tape was not rewound beforehand. • TUNER/LINE switch set to wrong position. • No tape in VCR or cassette safety tab broken off.
Tape Stops Before Complete Rewind	<ul style="list-style-type: none"> • Turn off COUNTER or again press REWIND. Tape rewinds only to 0000 when counter is on.
Rewind does not operate	<ul style="list-style-type: none"> • Tape already rewound. Check counter reading.
Clock Shows Incorrect Time or Date	<ul style="list-style-type: none"> • Power interruption. (Clock on the front panel shows "—:—:"). • Clock was not set accurately (especially AM and PM).

Specifications

Format:	VHS
Record/Playback System:	Two video record/ playback heads
Video Signal:	EIA standard: NTSC color
Antenna:	75-ohm external VHF antenna terminal 300-ohm external UHF antenna
Tuner	
Type:	80-channel voltage synthesis
Broadcast Channels:	VHF 2 - 13, UHF 14 - 83
Cable-TV Channels:	Midband A-1 and A-2 Midband A through I (14 - 22) Superband J through W (23 - 36)

Power Requirements

120V AC, 60Hz

Power Consumption

33 watts

Weight

16.1 lbs.

Dimensions

4-1/8" High
17-1/8" Wide
12-3/16" Deep

Note: Specifications subject to change without notice.

RCA Limited Warranty Video Cassette Recorder

What does your warranty cover:

- Any defect in material or workmanship.

For how long after purchase:

- Ninety days for labor charges.
- One year for parts.
The warranty period for rental VCR's begins with the first rental.

What will RCA do:

- Pay any RCA Authorized VCR Servicenter the labor charges to repair your VCR.
- Provide new or, at our option, rebuilt replacement parts for the RCA Authorized VCR Servicenter to make the repairs.

How do you get service:

- Take your VCR to any RCA Authorized VCR Servicenter or to the RCA Service Company. For their names and locations, ask your dealer or RCA Distributor, or look in the Yellow Pages.
- Show the service technician your Warranty Registration or evidence of purchase date.
- Pick up your VCR when repairs are completed.

What does your warranty *not* cover:

- Transportation to and from the Servicenter.
- Customer instruction. Your Owner's Manual provides information regarding operating instructions and user controls. For additional information ask your dealer.
- Installation and set-up service adjustments.
- Signal reception problems caused by external antenna or cable systems.
- Damage from misuse or neglect.
- Cleaning of video/audio heads, which is normal maintenance.
- Remote control batteries.
- VCR's which have been modified or incorporated into other products.
- VCR's purchased or serviced outside the USA.

How does state law relate to this warranty:

- This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

What if you purchased your VCR in Canada:

- Refer to the Canadian Warranty.

Si un livret d'instructions en français n'est pas inclus avec votre appareil, vous pouvez en obtenir un (INDIQUER LE NUMÉRO DE MODELE VOTRE NOM ET VOTRE ADRESSE) en vous adressant à:



RCA Corporation
Consumer Electronics Division
600 North Sherman Drive
Indianapolis, Indiana 46201

RCA Inc.
Service des données techniques
5575 av. Royalmount
Ville Mont-Royal, Quebec, Canada
H4P 1 J8

Trademark(s) ® Registered
Marca(s) Registrada(s)
Part Number 2821203-1
E72118
4647002
Printed in Japan